HP StorageWorks P9000 Performance Advisor Software Command-Line User Interface Reference Guide

This document describes the command-line user interface (CLUI) for HP StorageWorks P9000 Performance Advisor Software, explains how to install the CLUI, and how to use its commands. It is intended to be used as a reference for command syntax and usage.

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1 Overview

HP StorageWorks P9000 Performance Advisor is a graphical and command-line user interface that monitors real-time performance of HP StorageWorks XP and P9000 Disk Array products. The command-line user interface (CLUI) allows you to monitor performance, set alarms, and configure host information using commands and scripts. HP recommends that you use the available shell scripts to access commands in the CLUI.

CLUI for partially supported hosts

For some hosts (such as Linux), P9000 Performance Advisor can retrieve performance data, but cannot obtain configuration information directly from the host. To offer some level of support, a set of CLUI commands is provided for administrators to manually enter configuration information, so that these hosts can still be used to monitor performance. For more information about using the CLUI commands, see the *UserHostConfig.pdf* document available in the HP StorageWorks P9000 Performance Advisor Software CD under `Tools\ CmdLineInterface`.

2 Installing CLUI

Prerequisites

Before you install the CLUI, ensure that you have the following:

- Ensure that JRE 1.5.0_15 or later is already installed on the system. To determine the location of JRE, do the following:

  For UNIX:

  For UNIX, use one of the following commands:

  - `find /usr /sbin /home /bin /opt -name java`
  - `find /usr /sbin /home /bin /opt -name jre`

    Use the `find /usr /sbin /home /bin /opt -name java` or `find /usr /sbin /home /bin /opt -name jre` command.

  NOTE:

  The exact location can differ between systems, depending on the administrator's preference.

  For Windows:

  For Windows, use the `Find` utility to determine the location of `jre.exe` or `java.exe`.

  In most instances, the `jre.exe` or `java.exe` command is in a path that looks similar to the following:

  ```
  c:\Program Files\Java\JRE\1.5.0_15\bin\java.exe
  ```

  Enter this location in the environment variable called `JAVA_HOME`, without the following:

  ```
  \bin\java.exe
  ```

  If the command is found in a path that does not have a `bin` directory, enter everything except `\java.exe`. You can create or update this environment variable in the system control panel.

- Select the location where you want to install the CLUI:
  - **For IBM AIX, HP-UX, Linux, and Sun Solaris:** `/opt/xppa`
  - **For Windows:** `C:\Program Files\Hewlett-Packard\Performance Advisor\`
- Ensure that you have administrative privileges on the P9000 Performance Advisor management station. For more information, see the *HP StorageWorks P9000 Performance Advisor Software User Guide*.
- Ensure that the management station you want to connect to has a web server on which Secure Sockets Layer (SSL) is installed and configured.

NOTE:

On a UNIX-based system, the CLUI supports only the following terminals: `xterm`, `hpterm`, and `ansi`.

CLUI Installation on SSL

To install CLUI on SSL:

1. Download the InstallCert program from the following location:

   `http://blogs.sun.com/andreas/resource/InstallCert.java`

2. Compile the downloaded java file

   ```
   <JavaLocation\Bin>javac "c:\Documents and Settings\Administrator\
   Desktop\InstallCert.java"
   ```

3. Execute the InstallCert

   ```
   <JavaLocation\Bin>java InstallCert <ManagementStation>:443
   ```

   For example:

   ```
   <JavaLocation\Bin>java InstallCert vmwin2k3sp2:443

   Loading KeyStore C:\Program Files\Java\jre6\lib\security\cacerts...
   Opening connection to vmwin2k3sp2:443...
   Starting SSL handshake...

   javax.net.ssl.SSLHandshakeException: sun.security.validator.ValidatorException:
   PKIX path building failed: sun.security.provider.certpath.SunCertPathBuilderExce
   ption: unable to find valid certification path to requested target
           at com.sun.net.ssl.internal.ssl.Alerts.getSSLException(Unknown Source)
           at com.sun.net.ssl.internal.ssl.SSLSocketImpl.fatal(Unknown Source)
           at com.sun.net.ssl.internal.ssl.Handshaker.fatalSE(Unknown Source)
           at com.sun.net.ssl.internal.ssl.Handshaker.fatalSE(Unknown Source)
           at com.sun.net.ssl.internal.ssl.ClientHandshaker.serverCertificate(Unkno
   wn Source)
           at com.sun.net.ssl.internal.ssl.ClientHandshaker.processMessage(Unknown
   Source)
           at com.sun.net.ssl.internal.ssl.Handshaker.processLoop(Unknown Source)
           at com.sun.net.ssl.internal.ssl.Handshaker.process_record(Unknown Source
   )
           at com.sun.net.ssl.internal.ssl.SSLSocketImpl.readRecord(Unknown Source)

           at com.sun.net.ssl.internal.ssl.SSLSocketImpl.performInitialHandshake(Un
   known Source)
           at com.sun.net.ssl.internal.ssl.SSLSocketImpl.startHandshake(Unknown Sou
   rce)
           at com.sun.net.ssl.internal.ssl.SSLSocketImpl.startHandshake(Unknown Sou
   rce)
           at InstallCert.main(InstallCert.java:87)
   Caused by: sun.security.validator.ValidatorException: PKIX path building failed:
   sun.security.provider.certpath.SunCertPathBuilderException: unable to find vali
   d certification path to requested target
           at sun.security.validator.PKIXValidator.doBuild(Unknown Source)
           at sun.security.validator.PKIXValidator.engineValidate(Unknown Source)
           at sun.security.validator.Validator.validate(Unknown Source)
           at com.sun.net.ssl.internal.ssl.X509TrustManagerImpl.validate(Unknown So
   ```

```
urce)
        at com.sun.net.ssl.internal.ssl.X509TrustManagerImpl.checkServerTrusted(
Unknown Source)
        at InstallCert$SavingTrustManager.checkServerTrusted(InstallCert.java:18
2)
        ... 9 more
Caused by: sun.security.provider.certpath.SunCertPathBuilderException: unable to
find valid certification path to requested target
        at sun.security.provider.certpath.SunCertPathBuilder.engineBuild(Unknown
Source)
        at java.security.cert.CertPathBuilder.build(Unknown Source)
        ... 15 more

Server sent 3 certificate(s):

1 Subject CN=vmwin2k3sp2, OU=Terms of use at www.verisign.com/cps/testca (c)05,
OU=DCDU, O=HP, L=BLR, ST=KAR, C=IN
   Issuer  CN=VeriSign Trial Secure Server CA - G2, OU=Terms of use at https://w
ww.verisign.com/cps/testca (c)09, OU="For Test Purposes Only.  No assurances.",
O="VeriSign, Inc.", C=US
   sha1    af 0a 07 98 7b 60 73 59 5a 28 2b 3f df a8 b6 31 26 b0 74 1a
   md5     92 b3 e5 5f 58 44 bb 15 d3 5c 90 6a e8 b1 c5 99

2 Subject CN=VeriSign Trial Secure Server CA - G2, OU=Terms of use at https://w
ww.verisign.com/cps/testca (c)09, OU="For Test Purposes Only.  No assurances.",
O="VeriSign, Inc.", C=US
   Issuer  CN=VeriSign Trial Secure Server Root CA - G2, OU="For Test Purposes O
nly.  No assurances.", O="VeriSign, Inc.", C=US
   sha1    be d1 d1 4e 25 a7 94 36 83 9e 4b a7 cd 84 48 96 b7 0a 7f b0
   md5     71 13 d9 3a cd 21 f2 ee 9f 59 17 8d a6 f9 ae 14

3 Subject CN=VeriSign Trial Secure Server Root CA - G2, OU="For Test Purposes O
nly.  No assurances.", O="VeriSign, Inc.", C=US
   Issuer  CN=VeriSign Trial Secure Server Root CA - G2, OU="For Test Purposes O
nly.  No assurances.", O="VeriSign, Inc.", C=US
   sha1    51 51 b8 63 8a 4c 1f 15 54 56 ed 37 c9 10 35 ca d3 01 b9 36
   md5     e0 19 f5 fc c0 9a 13 0e 38 b7 bf 0d 02 40 d3 c2

Enter certificate to add to trusted keystore or 'q' to quit: [1]


[
[
  Version: V3
  Subject: CN=vmwin2k3sp2, OU=Terms of use at www.verisign.com/cps/testca (c)05,
OU=DCDU, O=HP, L=BLR, ST=KAR, C=IN
  Signature Algorithm: SHA1withRSA, OID = 1.2.840.113549.1.1.5

  Key:  Sun RSA public key, 1024 bits
  modulus: 1019223513744244290298263654772488491735288779585498892275831228105056
6833461858743720014481513805508781527914144403329785086175762688612669995184956
1855633469871176843323997411492521166201826294672470141514133953191509504781038
50439309396786077546670355793178006734331804133631554069517660335663086801112144
17

  public exponent: 65537
  Validity: [From: Tue Mar 29 05:30:00 GMT+05:30 2011,
               To: Fri Apr 29 05:29:59 GMT+05:30 2011]
  Issuer: CN=VeriSign Trial Secure Server CA - G2, OU=Terms of use at https://ww
w.verisign.com/cps/testca (c)09, OU="For Test Purposes Only.  No assurances.", O
="VeriSign, Inc.", C=US
  SerialNumber: [    725d44a5 adedc2d8 bb3b5ba1 c03db742]
```

```
Certificate Extensions: 8
[1]: ObjectId: 1.3.6.1.5.5.7.1.12 Criticality=false
Extension unknown: DER encoded OCTET string =
0000: 04 62 30 60 A1 5E A0 5C   30 5A 30 58 30 56 16 09  .b0`.^.\0Z0X0V..
0010: 69 6D 61 67 65 2F 67 69   66 30 21 30 1F 30 07 06  image/gif0!0.0..
0020: 05 2B 0E 03 02 1A 04 14   4B 6B B9 28 96 06 0C BB  .+......Kk.(....
0030: D0 52 38 9B 29 AC 4B 07   8B 21 05 18 30 26 16 24  .R8.).K..!..0&.$
0040: 68 74 74 70 3A 2F 2F 6C   6F 67 6F 2E 76 65 72 69  http://logo.veri
0050: 73 69 67 6E 2E 63 6F 6D   2F 76 73 6C 6F 67 6F 31  sign.com/vslogo1
0060: 2E 67 69 66                                        .gif


[2]: ObjectId: 2.5.29.35 Criticality=false
AuthorityKeyIdentifier [
KeyIdentifier [
0000: 28 17 13 8A BD D6 A2 B5   DC 06 2C B7 B6 8E DA 10  (.........,.....
0010: 66 60 6E E5                                        f`n.
]

]

[3]: ObjectId: 2.5.29.31 Criticality=false
CRLDistributionPoints [
  [DistributionPoint:
     [URIName: http://SVRTrial-G2-crl.verisign.com/SVRTrialG2.crl]
]]

[4]: ObjectId: 2.5.29.37 Criticality=false
ExtendedKeyUsages [
  serverAuth
  clientAuth
]

[5]: ObjectId: 2.5.29.32 Criticality=false
CertificatePolicies [
  [CertificatePolicyId: [2.16.840.1.113733.1.7.21]
[PolicyQualifierInfo: [
  qualifierID: 1.3.6.1.5.5.7.2.1
  qualifier: 0000: 16 23 68 74 74 70 73 3A   2F 2F 77 77 77 2E 76 65  .#https://
www.ve
0010: 72 69 73 69 67 6E 2E 63   6F 6D 2F 63 70 73 2F 74  risign.com/cps/t
0020: 65 73 74 63 61                                     estca

]]  ]
]

[6]: ObjectId: 2.5.29.15 Criticality=false
KeyUsage [
  DigitalSignature
  Key_Encipherment
]

[7]: ObjectId: 1.3.6.1.5.5.7.1.1 Criticality=false
AuthorityInfoAccess [
  [
   accessMethod: 1.3.6.1.5.5.7.48.1
   accessLocation: URIName: http://ocsp.verisign.com,
   accessMethod: 1.3.6.1.5.5.7.48.2
   accessLocation: URIName: http://SVRTrial-G2-aia.verisign.com/SVRTrialG2.cer]
]
```

```
[8]: ObjectId: 2.5.29.19 Criticality=false
BasicConstraints:[
  CA:false
  PathLen: undefined
]

]
  Algorithm: [SHA1withRSA]
  Signature:
0000: 6B CE 5A 02 F8 FB 63 D7   D8 00 54 15 F6 92 56 CA  k.Z...c...T...V.
0010: 37 75 D1 83 F7 38 C6 46   72 D8 D8 D2 A5 35 1D 3F  7u...8.Fr....5.?
0020: 5D 13 00 08 53 D0 3B 10   1A 79 A8 52 CA D8 50 81  ]...S.;..y.R..P.
0030: A0 B6 9E 54 B7 8F 75 89   BF A0 F1 BF FE 13 77 07  ...T..u.......w.
0040: 27 14 A2 21 FE F9 9D 57   C5 B4 37 A0 3C FC 01 F5  '..!...W..7.<...
0050: 13 50 46 84 F9 F4 4B DB   CD 10 20 E8 8B 76 00 A3  .PF...K... ..v..
0060: 09 18 9F FA A2 26 30 09   BD 99 FE 36 28 2D AC B0  .....&0....6(-..
0070: 5E F4 31 61 C2 17 94 00   25 F8 DC 91 ED 55 C5 78  ^.1a....%....U.x
0080: BF A7 61 D4 EE 25 DA 23   88 F6 26 FD 3F 5A B9 2C  ..a..%.#..&.?Z.,
0090: 7A F2 9A 11 57 67 45 19   57 1F 1C C0 28 B1 0C 4A  z...WgE.W...(..J
00A0: CB 0A C4 FB 5F 8D 18 6A   5B 11 53 D8 30 FA 24 6F  ...._..j[.S.0.$o
00B0: 9F C9 5D BB 7F 4C 03 19   13 1F 52 38 C0 4C 56 E3  ..]..L....R8.LV.
00C0: EB CF 3B 9C 4B F9 12 FF   DA D5 3E 8B B5 8B 5F 08  ..;.K.....>..._.
00D0: 96 AF 9E 70 62 6D B9 4F   92 88 3B 5F F4 B4 A0 F6  ...pbm.O..;_....
00E0: 2F A2 53 72 A4 84 F7 71   B2 3D C3 7B 23 14 7E BA  /.Sr...q.=..#...
00F0: DC 27 0A 0D 2E DB 3A 6A   B3 D1 A6 96 6C 19 48 4A  .'....:j....l.HJ

]
```

Add certificate to keystore `jssecacerts` using alias `vmwin2k3sp2-1`



Figure 1

4. Copy the generated `jssecacerts` to JRE location under `<>:\Program Files\Java\jre6\lib\security` or the JRE location path and under Security as mentioned in the following example:

   Example: `C:\Program Files\Java\jre6\lib\security`

5. Copy the below Jar files from `<JRELocation\lib\ext>` `sunpkcs11.jar`, `sunjce_provider.jar`, and `dnsns.jar` under `C:\Program Files\Hewlett Packard\Performance Advisor\`

   For non Windows the path for CLUI installation will be `/opt/xppa/Performance Advisor/clui/`.

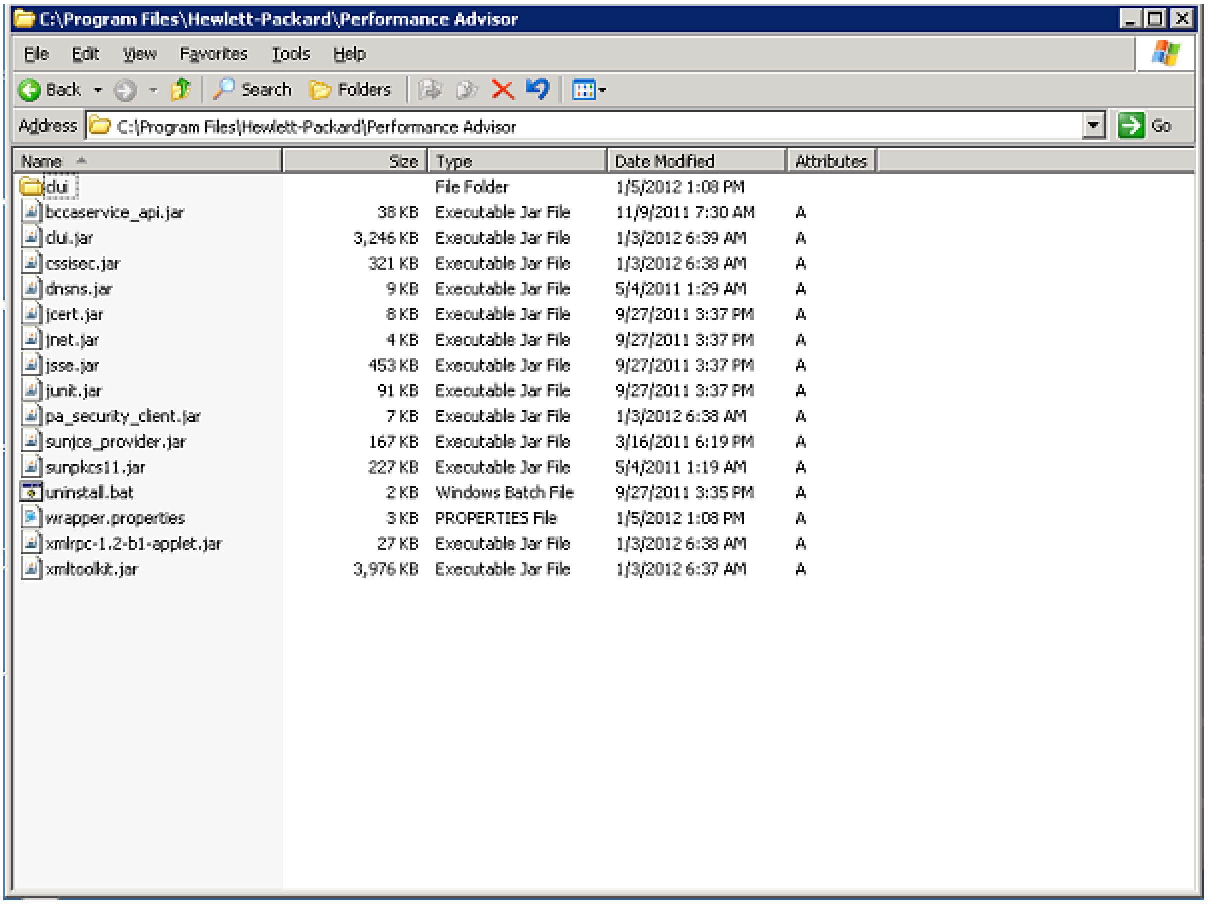


Figure 2

Installing CLUI

For UNIX variants

To install the CLUI on the UNIX variants, complete the following steps:

1. Navigate to <dvd_drive>:\Tools\CmdLineUserInterface\
2. Unpack the appropriate .tar file for your platform using Winzip, and save the contents in a temporary directory.
3. Run the install.sh file. You might have to set the install.sh file as an executable. To do this, enter **chmod 755 install.sh** in the command line. You must be a superuser to execute this file.
4. When prompted, enter the location of JRE. However, you must not include the location of the bin directory and the path that follows.

   If the Java or JRE commands are not found, the script exits. Otherwise, you are prompted to enter the management station name.
5. The default installation location is displayed /opt/xppa and the script prompts you to enter the non-default installation location.

   Enter **n** to continue with the default installation location.

   Enter **y** for non-default installation location, and type the path of the location where you want to install the CLUI.

6. The script prompts you to enter the management station name or IP Address.
   - If you want to retain the default value, which is `http:\\<localhost>`, press **Enter** and proceed to the next step. In addition, port 80 will be the default port used to establish communication with the management station.
   - If you entered the management station name or IP address, the installation script prompts you for the following additional values:
     a. To confirm if SSL is installed and configured on the management station's web server.

        Enter **n** to continue without SSL.
     b. To enter the port number of the management station.

        Enter the same port number that P9000 Performance Advisor on the management station is configured to use.

        If you want to use the default port 80, press **Enter**.

   Proceed to the next step.
7. The script prompts for your user name and password.
   - If you are a valid user on the local system where P9000 Performance Advisor is installed or on the domain controller, use your local system or domain login credentials for authentication.

   NOTE:

   It is mandatory to provide a valid user name and password for all the CLUI commands to function properly. Valid user account implies one of the following:
   - The local system administrator has added your name to the `HP Storage Admin` or `HP Storage Users` group on the system where P9000 Performance Advisor is installed.
   - The domain/site administrator has added your name to the group (global group) that is given administrator privileges or to the group (global group) that is given user-level privileges.

   IMPORTANT:

   If you specify only the user name and not your domain name, P9000 Performance Advisor will assume that you are a local system user or you belong to the same domain as that of the management station.

   - If you have a user account created in the P9000 Performance Advisor user super user database, use your P9000 Performance Advisor login credentials for authentication.
8. After installation, export the default installation directory path using the following command:

```
export PATH=$PATH:/opt/xppa/clui
```

   This completes installing CLUI and makes all installed libraries available in the file system.

For Windows:

NOTE:

It is a prerequisite to set the default installation directory path. To set the path, complete the following steps:

1. On your management station, go to **Start** > **Control Panel** > **System**.

   The **System properties** dialog box appears.

2. Select the **Advanced** tab and click **Environment Variables**.

   The list of Environment Variables are displayed.

3. Under **System Variables**, click **New** and add a new variable.

   For example, you can add `JAVA_HOME=C:\Program Files\Java\jre6` as the new variable. The Java executable file resides inside the bin folder of the above path and the path may vary according to the Java installation or versions of Java installed on your management station.

   For more information to find the Java installation path, see Prerequisites.

To install CLUI on Windows platform, complete the following steps:

1. Navigate to `<dvd_drive>:\Tools\CmdLineUserInterface\`.
2. Unpack the `winclui.zip` file, and save the contents in a temporary directory.
3. Run `install.bat`.
4. The script checks the location indicated by the `JAVA_HOME` environment variable to find out if the `java.exe` or `jre.exe` program exists.

   NOTE:

   If the Java or JRE commands are not found, the script exits.

5. The default installation location is `C:\Program Files\Hewlett-Packard\Performance Advisor\` displayed and you are prompted to enter the CLI (non-default) installation location.

   Enter **n** to continue with the default installation location.

   Enter **y** for non-default installation location, and type the path of the location where you want to install the CLUI.

   NOTE:

   A message displays the properties utility. This utility will create and maintain the `wrapper.utilities` file.

6. The script provides an option for enabling the IPv6.

   Enter **n** to continue with the default value, which is IPv4.

7. The script prompts you to enter the management station name or IP Address.
   - If you want to retain the default value, which is `http:\\<localhost>`, press **Enter** and proceed to the next step. In addition, port 80 will be the default port used to establish communication with the management station.

- If you entered the management station name or IP address, the installation script prompts you for the following additional values:
  a. To confirm if SSL is installed and configured on the management station's web server.

     Enter **n** to continue without SSL.
  b. To enter the port number of the management station http port number.

     Enter the same port number that P9000 Performance Advisor on the management station is configured to use.

     If you want to use the default port 80, press **Enter**.

  Proceed to the next step.

8. The script prompts for your user name and password.
   - If you are a valid user on the local system where P9000 Performance Advisor is installed or on the domain controller, use your local system or domain login credentials for authentication.

     NOTE:

     It is mandatory to provide a valid user name and password for all the CLUI commands to function properly. Valid user account implies one of the following:

     - The local system administrator has added your name to the `HP Storage Admin` or `HP Storage Users` group on the system where P9000 Performance Advisor is installed.
     - The domain/site administrator has added your name to the group (global group) that is given administrator privileges or to the group (global group) that is given user-level privileges.

     IMPORTANT:

     If you specify only the user name and not your domain name, P9000 Performance Advisor will assume that you are a local system user or you belong to the same domain as that of the management station.

   - If you have a user account created in the P9000 Performance Advisor user database, use your P9000 Performance Advisor login credentials for authentication.

   This completes installing CLUI on the Windows platform.

Post-installation instructions

To use the shell scripts, you must either change the directory to the location of the shell scripts (usually in a CLUI directory in the install directory), or add that location to your path and enter the name of the script. To print the usage statement, call the script using the `a -?` command.

NOTE:

The UNIX-based system users must place quotation marks (`" "`) around the question mark (`?`), because in some shells, the question mark (`?`) is used as a wild card. Further, in UNIX, when specifying Windows device files, it is necessary to place quotation marks around `#` to avoid commenting out the rest of the line.

IMPORTANT:

The management station where the P9000 Performance Advisor is installed and all the systems where the host agents and CLUI software are installed should have their system time set to the correct local time. For example, if the system time is set to an incorrect time on the host system, the management station might report the performance data with a wrong time stamp. This is also applicable for the client systems, which connect to the management station using the Internet Explorer (IE) browser to launch the P9000 Performance Advisor.

Uninstalling CLUI

To remove CLUI, change to the installation directory and invoke the uninstall script, as follows:

- For UNIX: `uninstallclui.sh`
- For Windows: `uninstall.bat`

3 CLUI commands

This chapter describes the commands in the HP StorageWorks P9000 Performance Advisor CLUI. The supported shell scripts enable you to use CLUI easily.

NOTE:

For every CLUI command that you execute, you can use the `-auth` and provide a valid user name and password as inputs for `-auth`. If you do not want the user name and password that you have provided to be visible on the console, you can execute the properties utility script (PROPUTILITY) in an interactive mode and provide your user credentials. For more information on using PROPUTILITY, see PROPUTILITY .

Syntax conventions

Table 1 lists the symbols that are used to depict command syntax. This table supplements the conventions described in Typographic conventions .

Table 1 Syntax conventions

Symbol	Meaning
[ ]	Indicates optional items.
< >	Indicates a value that you define.
|	Separates mutually exclusive choices. Type one of the choices.

VERSION

Syntax

```
version [-v] [-?]
```

Supported disk array types

XP and P9000 disk arrays

Description

Displays the version of P9000 Performance Advisor.

Switches

–v	Displays the full version string.
–?	Prints the usage statement.

Example

```
version -v
```

EXT-LUN

Syntax

```
elun [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>] -dkc <serial
#> [-?]
```

Supported disk array types

XP and P9000 disk arrays

Description

Displays information about external Logical Unit Number (LUN), such as the logical device number, Eport, Eseq, and ELDEV. It also displays the vendor information of the array to which the LUN belongs.

NOTE:

If the external array is a non-XP array, E-Seq is `<Vendor ID>:<Produce ID>` and E-LDEV is `'-1'`.

Switches

–dkc <serial #>	**Required.** Specifies the array serial number.
–d <delim>	Specifies the delimiter for the delimited output. There is no space between `-d` and the delimiter character.
–L	Specifies the labeled and delimited output data.
–hr	Displays data in a readable format.
–ms <URL>	Specifies the address of a management station in the format: `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`.
–auth <user:passwd>	Specifies a username and password pair in the format **user name:password**.
–?	Prints the usage statement.

Examples

```
elun -dkc 10090

elun -dkc 10033 –hr

elun -dkc 1038 –L

elun -dkc 5235 –ms http://16.1.17.192:8080

elun -auth administrator:userpwd
```

CACHEGRP

Syntax

```
cachegrp -dkc <serial #> [-clpr <CLPR name>] [-perf] [-st <start time>
-et <end time>] [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>]
[-pf <password file>] [-?]
```

Supported disk array types

XP and P9000 disk arrays

Description

Displays cache details, such as the cache size of a given Cache Logical Partition (CLPR). It also displays the participating RAID Group list. In addition, it can be used to obtain the cache size of each individual RAID Group of a given CLPR.

CACHEGRP command does not display the snapshot pools unless snapshot pool is associated with any Virtual volume.

Switches

–dkc <serial #>	**Required**. Specifies the array serial number.
–clpr <clpr name>	Specifies the name of the CLPR group.
–perf	Displays the performance data (`-clpr` option is ignored).
–st <start time>	Specifies the start time in the format mm.dd.yyyy hh:mm:ss.
–et <end time>	Specifies the end time in the format mm.dd.yyyy hh:mm:ss.
–d<delim>	Specifies the delimiter for the delimited output. There is no space between `-d` and the delimiter.
–L	Specifies the labeled and delimited output data.
–hr	Displays data in a readable format.
–ms <URL>	Specifies the address of a management station in the format: `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`.

–auth <user:passwd>	Specifies a user name and password pair in the format user name:password.
–pf <password file>	Can be used in place of `-auth`. NOTE: The password file must be created using the encrypt script only.
–?	Prints the usage statement.

Examples

```
cachegrp -dkc 10851 -clpr 0 -hr
cachegrp -dkc 10851 -perf -hr
cachegrp -dkc 10851 -hr
cachegrp -dkc 10851 -clpr 0 -L
```

DKCS

Syntax

```
dkcs [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>] -dkc <serial
#> [-?]
```

Supported disk array types

XP and P9000 disk arrays.

NOTE:

The output for this command may be different for XP and P9000 disk arrays. For more information, see DKCS.

Description

Displays the Client-Host Interface Processor (CHIP) and Array Control Processor (ACP) utilization data for a given array.

Switches

–dkc <serial #>	**Required**. Specifies the array serial number.
–d<delim>	Specifies the delimiter for delimited output. There is no space between `-d` and the delimiter character.
–L	Specifies the labeled and delimited output data.
–hr	Displays data in a readable format.

–ms <URL>	Specifies the address of a management station in the format: `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`.
–auth <user:passwd>	Specifies a user name and password pair in the format: **username:password**.
–?	Prints the usage statement.

Examples

```
dkcs -hr -dkc 30143
```

```
dkcs -L -dkc 30143
```

```
dkcs -dkc 30143
```

DKCH

Syntax

```
dkch [-d<delim>] [-L] [-hr] [-ms<URL>] [-auth <user:passwd>] -dkc <serial
#> [-st <start time> -et <end time>] [-?]
```

Supported disk array types

XP and P9000 disk arrays.

NOTE:

The output for this command may be different for XP and P9000 disk arrays. For more information, see DKCH.

Description

Displays the CHIP and ACP utilization history of a given array for a given time range.

Switches

–dkc <serial#>	**Required**. Specifies the array serial number.
–d<delim>	Specifies the delimiter for delimited output. There is no space between -d and the delimiter character.
–L	Specifies the labeled and delimited output data.
–hr	Displays data in a readable format.
–ms <URL>	Specifies the address of a management station in the format `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`.

–auth <user:pass-wd>	Specifies a user name and password pair in the format user name:password.
—st <start time>	Specifies the start time in the format mm.dd.yyyy hh:mm:ss.
–et <end time>	Specifies the end time in the format mm.dd.yyyy hh:mm:ss.
–?	Prints the usage statement.

NOTE:

If no start and end time is specified, only the most recent 10 records are retrieved from the management station.

Examples

```
dkch -dkc 10055 -hr
```

```
dkch -L -dkc 30143
```

```
dkch -dkc 10055 —L
```

LUNH

Syntax

```
lunh [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>] -ha <host
ID>[-mr <maxRecords>] [-rg <raidGroup>] [-chp <chpPort>] [-acp <acpPair>]
[-dkc <serial #>] [-dver <xxxxxx>] [-?] [-luse] [-ugrp]
```

Supported disk array types

XP and P9000 disk arrays.

NOTE:

The output for this command may be different for XP and P9000 disk arrays. For more information, see the sample LUNH report.

Description

Displays logical unit snapshot data, such as LUN ID, device file, emulation, Snapshot ID, CHIP port ID, and ACP pair ID. The output of this command is sorted by the array ID.

NOTE:

The port type, such as Fibre, Ficon, Escon, or FCoE (applicable only for P9000 disk arrays) is also displayed beside the CHIP port ID. The CHIP Port Status in the LUNH output displays the port type.

If an array is connected to a host agent that is running the HP-UX 11i v3 operating system, the device special file (DSF) is displayed in a new format. A legacy DSF is displayed in parenthesis next to the new format.

Cache Fast Writes and Direct Access Storage Device (DASD) Fast Writes are applicable to mainframe volumes only.

For an XP24000 array with P9000 Thin Provisioning and P9000 Snapshot under RAID Group, the following output is displayed:

- For P9000 Thin Provisioning:

  `THP-PID<pool ID>`

- For P9000 Snapshot:

  `SNAP-PID<pool ID>.`

Switches

—ha <host ID>	**Required.** Specifies the host ID for which LUN information is reported. The word "all" can be used to indicate all hosts.
–ha <host name>	Specifies the host system name.
–d<delim>	Specifies the delimiter for the delimited output. There is no space between -d and the delimiter.
–L	Specifies the labeled and the delimited output data.
–hr	Displays data in a human readable format.
–dkc <serial #>	Specify the array serial number. The word "all" can be used to indicate all DKCs.
–ms <URL>	Specifies the address of a management station in the format `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`.
–auth <user:passwd>	Specify a user name and password pair in the format user name:password.
–dver <xxxxxx>	Specifies the version number. Indicates how the data must be displayed. Currently, the supported values are 010500, 010600, and 015100. The default value is 010500.
–mr <maxRecords>	Specifies the maximum number of records to view. You cannot specify a number of records higher than 16000.
–rg <raidGroup>	Specifies the RAID Group for which you want the output displayed. The word "all" may be used here to indicate all hosts. Not adding this switch has the same effect.

–chp <chpPort>	Specifies the CHP port for which you want the output displayed. The word "all" can be used to indicate all hosts. Not adding this switch has the same effect.
–acp <acpPair>	Specifies the ACP pair for which you want the output displayed. The word "all" can be used to indicate all hosts. Not adding this switch has the same effect.
–?	Prints the usage statement.
-luse <ldev ID>	Specifies the Logical Unit Size Expansion (LUSE) master ID.
-ugrp <user group>	Specifies the User Group Name. Can be used interchangeably with `-dkc` or `-ha`.

Examples

```
lunh -ha xpslk.user.server.com –hr
```

```
lunh -ha xpslk.user.server.com -L
```

```
lunh -ha hpbs1428.user.server.com -hr -dver 010600
```

```
lunh -ha hpbs1428.user.server.com -L -dver 010600
```

```
lunh -ha angus -dkc 10 001 –hr
```

LUND

Syntax

```
lund [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>] -dkc
<user:passwd>] -dkc <serial #>
```

```
[-mr <maxRecords>] [-rg <raidGroup>] [-chp <chpPort>] [-acp <acpPair>]
```

```
[-ha <host ID>] [-dver<xxxxxx>] [-?] ugrp <user group>
```

Supported disk array types

XP and P9000 disk arrays

Description

Displays the logical unit disk controller Snapshot data such as LUN ID, device file, emulation, Snapshot ID, CHIP port ID, and ACP pair ID. The output of this command is sorted by the host ID.

NOTE:

The port type, such as Fibre, Ficon, Escon, or FCoE (applicable only for P9000 disk arrays) is also displayed beside the CHIP port ID. The CHIP Port Status in the LUND output displays the port type.

If an array is connected to a host agent that is running the HP-UX 11i v3 operating system, the DSF (device special file) is displayed in a new format. A legacy DSF is displayed in parenthesis next to the new format.

Cache Fast Writes and DASD Fast Writes are applicable for mainframe volumes only.

For an XP24000 array with P9000 Thin Provisioning and P9000 Snapshot, the output displayed, under RAID Group, for P9000 Thin Provisioning is `THP-PID<pool ID>` and the output for Snapshot is `SNAP-PID<pool ID>`.

For an XP24000 array with P9000 Thin Provisioning and P9000 Snapshot under RAID Group, the following output is displayed:

- For P9000 Thin Provisioning:

  `THP-PID<pool ID>`

- For P9000 Snapshot:

  `SNAP-PID<pool ID>.`

Switches

–dkc <serial #>	**Required**. Specify the array serial number. The word "all" can be used to indicate all DKCs.
–d<delim>	Specify the delimiter for delimited output. There is no space between -d and the delimiter.
–L	Specify the labeled and delimited output data.
–hr	Displays data in a readable format.
–ha <host ID>	Specify the host ID for which LUN information is displayed. The word "all" can be used to indicate all hosts.
–ms <URL>	Specify the address of a management station in the format `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>.`
–auth <user:passwd>	Specify a user name and password pair in the format user name:password.
–dver <xxxxxx>	Specify the version number. Indicates how the data must be displayed. Currently supported values are 010500, 010600, and 015100. The default value is 010500.
–mr <maxRecords>	Specify the maximum number of records to return. You cannot specify a number of records higher than 16000.
–rg <raidGroup>	Specify the RAID Group for which you want the output displayed. The word "all" can be used to indicate all hosts. Not adding this switch has the same effect.

–chp <chpPort>	Specify the CHP port for which you want the output displayed. The word "all" can be used to indicate all hosts. Not adding this switch has the same effect.
–acp <acpPair>	Specify the ACP pair for which you want the output displayed. The word "all" can be used to indicate all hosts. Not adding this switch has the same effect.
–?	Prints the usage statement.
–ugrp <user group>	Specify the User Group Name. Can be used interchangeably with `-dkc` or `-ha`.

Examples

```
lund -hr -dkc 30143
```

```
lund -dkc 30143 –L
```

```
lund -dkc 30143
```

```
lund -hr -dkc 30143 -dver 010600
```

LDEV

Syntax

```
ldev [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>] -dkc <serial
#>
```

```
-ldev <logical device #> [-st <start time> -et <end time>][-dver <xxxxxx>]
[-?]
```

Supported disk array types

XP and P9000 disk arrays.

NOTE:

The output of this command might be different for XP and P9000 disk arrays. For more information, see LDEV.

Description

Displays logical device history data for a given duration. It lists information such as random reads, random writes, sequential writes, sequential reads, random read hits, random write hits, sequential read hits, and sequential write hits.

If no start time and end time is specified, this command returns the most recent 10 performance data points of a LDEV from the management station.

ⓘ IMPORTANT:

- The LDEV command does not report "write cache hits" for either random or sequential workloads. The write cache hits for random and sequential workloads is displayed for mainframe volumes only.
- For a P9000 disk array, the current and the default MP blades for an LDEV are also displayed in the command output.

Switches

–dkc <serial #>	**Required**. Specify the array serial number.
–d<delim>	Specify the delimiter for delimited output. There is no space between -d and the delimiter.
–L	Specify the labeled and delimited output data.
–hr	Displays data in a readable format.
–ms <URL>	Specify the address of a management station in the format `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`.
–auth <user:passwd>	Specify a user name and password pair in the format user name:password.
–dver <xxxxxx>	Specify the version number. Indicates how the data must be displayed. Currently supported values are 010500 and 010600. The default value is 010500.
–ldev <logical device #>	**Required**. Specify the logical device number in the form <cu>:<ldev>, where: <cu> is the control unit number (0...ff). <ldev> is the logical device number (0...ff). NOTE: To get the logical device number, run the LUND command. For more information, see LUND .
–st <start time>	Specify the start time in the format mm.dd.yyyy hh:mm:ss.
–et <end time>	Specify the end time in the format mm.dd.yyyy hh:mm:ss.
–?	Prints the usage statement.

Examples

```
ldev -dkc 30143 -ldev 1:6C -st 01.03.2001 12:49:00 -et 01.03.2001 14:20:00

ldev -dkc 10055 -ldev 0:7E

ldev -dkc 10055 -L -ldev 0:7E

ldev -dkc 10055 -hr -ldev 0:7E -dver

ldev -dkc 10055 -ldev 0:7E -dver 010600

ldev -dkc 10055 -ldev 0:7E -dver 010600 –L
```

```
ldev -dkc 10055 -ldev 0:7E -st 06.19.2006 14:00:00 -et 06.19.2006 14:30:00
```

ALARMHIST

Syntax

```
alarmhist [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>] [-dkc
<serial #>]
[-metric <Category>] [-mval <Item Value>] [-st <mm.dd.yyyy hh:mm:ss>]
[-et <mm.dd.yyyy hh:mm:ss>] [-tclass <Time Class>] [-pf <password file>]
```

Supported disk array types

XP and P9000 disk arrays

Description

Displays the alarm history data. Alarm history objects are created when the array usage exceeds a certain user-defined threshold in one of the metric categories. This command does not display the status of alarm.

Switches

–ms <URL>	Specify the address of a management station in the format <http://path.to.managementstation/>.
–auth <user:passwd>	Specify a user name and password pair in the format username:password.
–dkc <serial #>	Specify the array serial number.

–metric <Category>	Specify the metric category. Valid values are as follows: IO_TOTAL - LDEV IO Total IO_RAND_TOTAL LDEV – IO Random Total IO_RAND_READ LDEV - IO Random Read IO_RAND_READ_CACHE LDEV – IO Random Read Cache Hits IO_RAND_WRITE LDEV – IO Random Write IO_RAND_WRITE_CACHE LDEV IO Random Write Cache Hits IO_SEQ_TOTAL LDEV IO Sequential Total IO_SEQ_READ LDEV IO Sequential Read IO_SEQ_READ_CACHE LDEV IO Sequential Read Cache Hits IO_SEQ_WRITE LDEV IO Sequential Write IO_SEQ_WRITE_CACHE LDEV IO Sequential Write Cache Hits MB_TOTAL LDEV MB Total MB_RAND_TOTAL LDEV MB Random Total MB_RAND_READ LDEV MB Random Read MB_RAND_WRITE LDEV MB Random Write MB_SEQ_TOTAL LDEV MB Sequential Total MB_SEQ_READ LDEV MB Sequential Read MB_SEQ_WRITE LDEV MB Sequential Write CFW_TOTAL LDEV IO type CFW_READ LDEV IO type CFW_READ_CACHE LDEV IO type CFW_WRITE LDEV IO type CFW_WRITE_CACHE LDEV IO type DFW_COUNT LDEV IO type DFW_NRML_COUNT LDEV IO type DFW_SEQ_ACCESS LDEV IO type DFW_WRITE_HITS LDEV IO type DFW_SA_WRITE_HITS LDEV IO type CACHEMODE_INHIBIT LDEV IO type CACHEMODE_BYPASS LDEV IO type PORT_IO_MAX Port Maximum IO/s PORT_IO_MIN Port Minimum IO/s PORT_IO_AVE Port Average IO/s PORT_MB_MAX Port Maximum MB/s PORT_MB_MIN Port Minimum MB/s PORT_MB_AVE Port Average MB/s FBUS_HI DKC Bus Utilization FBUS_LO DKC Bus Utilization MBUS_HI DKC Bus Utilization MBUS_LO DKC Bus Utilization BACKEND_SEQ_READ LDEV Backend BACKEND_NONSEQ_READ LDEV Backend BACKEND_WRITE LDEV Backend THP Pool Occupancy Snapshot Pool Occupancy
–mval <Item Value>	Specify the item value, for example an LDEV number or Port ID.
–st <mm.dd.yyyy hh:mm:ss>	Specify the start time in the format mm.dd.yyyy hh:mm:ss.

–et <mm.dd.yyyy hh:mm:ss>	Specify the end time in the format mm.dd.yyyy hh:mm:ss.
–tclass <Time Class>	The class for the time constraints. Valid arguments are: `posted Time` constrained by the posted time. `updated Time` constrained by the updated time. `dispatched Time` constrained by the updated time.
–pf <password file>	Can be used in place of `–auth`. NOTE: The password file must be created using the `encrypt` command only.
–d<delim>	Specify the delimiter for delimited output. Used with `–list` and `–details`.
–hr	Displays data in a readable format. Used with `–list` and `–details`.
–?	Prints the usage statement.

NOTE:

The following metrics are applicable for mainframe volumes only:

CFW_TOTAL LDEV IO type

CFW_READ LDEV IO type

CFW_READ_CACHE LDEV IO type

CFW_WRITE LDEV IO type

CFW_WRITE_CACHE LDEV IO type

DFW_COUNT LDEV IO type

DFW_NRML_COUNT LDEV IO type

DFW_SEQ_ACCESS LDEV IO type

DFW_WRITE_HITS LDEV IO type

DFW_SA_WRITE_HITS LDEV IO type

Example

```
alarmhist –hr
```

PORT

Syntax

```
port [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>] -dkc <serial
#> -port <port ID> [-?]
```

Supported disk array types

XP and P9000 disk arrays

Description

Displays the port performance data. It lists the maximum, average, and minimum I/Os and MBs per second for a given array.

Switches

–dkc <serial #>	**Required**. Specify the array serial number.
–d<delim>	Specify the delimiter for delimited output. There is no space between -d and the delimiter.
–L	Specify the labeled and delimited output data.
–hr	Displays data in a readable format.
–ms <URL>	Specify the address of a management station in the format `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`.
–auth <user:passwd>	Specify a user name and password pair in the format user name:password.
–port <port ID>	**Required**. Specify the port number in the form CLxc. x is the cluster number and c is the port letter within the cluster.
–?	Prints the usage statement.

Examples

```
port -dkc 30143 -port cl1a -hr
```

```
port -dkc 30143 -port cl1a –L
```

CONFIGALARM

Syntax

```
configalarm -dkc <serial#> -mval <Item List> -metric <Metric Category> [
-ms <URL>] [-auth <user:passwd>] [-list] [-pf <password file>] [-th
<threshold>] [-email <Email List>] [-snmp <SNMP List>] [-vpo] [-e]
[-d<delim>] [-L] -hr [-?]
```

Description

Enables you to select metric values and monitor them for a particular metric. Also, you can configure threshold and dispatch settings, email and SNMP notifications, and enable alarms on these metric values.

Switches

–dkc <serial num>	**Required**. Specify the array serial number. Not required if `-list` is used.
–mval <Item List>	**Required** Specify the csv list of items for which alarms are being created. Not required if `-list` is used.

–metric <Metric Category>	**Required** Specify the alarm metric to watch. Not required if `-list` is used. Valid values are: IO_TOTAL LDEV IO Total IO_RAND_TOTAL LDEV IO Random Total IO_RAND_READ LDEV IO Random Read IO_RAND_READ_CACHE LDEV IO Random Read Cache Hits IO_RAND_WRITE LDEV IO Random Write IO_RAND_WRITE_CACHE LDEV IO Random Write Cache Hits IO_SEQ_TOTAL LDEV IO Sequential Total IO_SEQ_READ LDEV IO Sequential Read IO_SEQ_READ_CACHE LDEV IO Sequential Read Cache Hits IO_SEQ_WRITE LDEV IO Sequential Write IO_SEQ_WRITE_CACHE LDEV IO Sequential Write Cache Hits MB_TOTAL LDEV MB Total MB_RAND_TOTAL LDEV MB Random Total MB_RAND_READ LDEV MB Random Read MB_RAND_WRITE LDEV MB Random Write MB_SEQ_TOTAL LDEV MB Sequential Total MB_SEQ_READ LDEV MB Sequential Read MB_SEQ_WRITE LDEV MB Sequential Write CFW_TOTAL LDEV IO type CFW_READ LDEV IO type CFW_READ_CACHE LDEV IO type CFW_WRITE LDEV IO type CFW_WRITE_CACHE LDEV IO type DFW_COUNT LDEV IO type DFW_NRML_COUNT LDEV IO type DFW_SEQ_ACCESS LDEV IO type DFW_WRITE_HITS LDEV IO type DFW_SA_WRITE_HITS LDEV IO type CACHEMODE_INHIBIT LDEV IO type CACHEMODE_BYPASS LDEV IO type PORT_IO_MAX Port Maximum IO/s PORT_IO_MIN Port Minimum IO/s PORT_IO_AVE Port Average IO/s PORT_MB_MAX Port Maximum MB/s PORT_MB_MIN Port Minimum MB/s PORT_MB_AVE Port Average MB/s FBUS_HI DKC Bus Utilization FBUS_LO DKC Bus Utilization MBUS_HI DKC Bus Utilization MBUS_LO DKC Bus Utilization BACKEND_SEQ_READ LDEV Backend BACKEND_NONSEQ_READ LDEV Backend BACKEND_WRITE LDEV Backend THP_POOL_OCCUPANCY SNAPSHOT_POOL_OCCUPANCY
–list	Indicates that the command must list only configured alarms.
–ms <management station>	Specify the address of a management station in the format `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`.
–auth <user:passwd>	Specify a user name and password pair in the format user name:password.

–pf <password file>	Can be used in place of `-auth`. NOTE: The password file must be created using only the encrypt command.
–th <threshold>	Specify the threshold level.
–email <Email List>	Specify a csv list of email destinations.
–snmp <SNMP List>	Specify a csv list of SNMP destinations.
–e	Indicates the alarm is enabled.
–d<delim>	Specify the delimiter for delimited output. Used with `-list` and `-details`.
–hr	Displays data in a readable format. Used with `-list` and `-details`.
–?	Prints the usage statement.

NOTE:

The following metrics are applicable to mainframe volumes only:

CFW_TOTAL LDEV IO type

CFW_READ LDEV IO type

CFW_READ_CACHE LDEV IO type

CFW_WRITE LDEV IO type

CFW_WRITE_CACHE LDEV IO type

DFW_COUNT LDEV IO type

DFW_NRML_COUNT LDEV IO type

DFW_SEQ_ACCESS LDEV IO type

DFW_WRITE_HITS LDEV IO type

DFW_SA_WRITE_HITS LDEV IO type

The P9000 Thin Provisioning (THP) Pool Occupancy, Snapshot Pool Occupancy, and Continuous Access Journal metric category for an XP24000 array can be determined using the following commands:

```
configalarm -dkc <array sn no> -mval <THP poolid> -metric
THP_POOL_OCCUPANCY
```

```
configalarm -dkc <array sn no> -mval <Snapshot poolid> -metric SNAPSHOT_
POOL_OCCUPANCY
```

```
configalarm -dkc <array sn no> -mval <Snapshot poolid> -metric
JOURNAL_FILE_USAGE_UTIL
```

Examples

```
configalarm -list -hr
configalarm -list –L
configalarm -list
configalarm -dkc 10227 -mval 1 -metric THP_POOL_OCCUPANCY
configalarm -dkc 10227 -mval 0 -metric SNAPSHOT_POOL_OCCUPANCY
configalarm -dkc 10001 -mval 0 -metric JOURNAL_FILE_USAGE_UTIL -th 10
```

HOSTCFG

Syntax

```
hostcfg –op <op_string> -ha <HostAgent> [-auth <user:passwd>] [-ms <URL>]
[-L] [d<char>] [-hr] [-?]
```

Supported disk array types

XP and P9000 disk arrays

Description

Displays the configuration data of the host that is connected to the management station. It also displays array related information. You can also use this command to remove unwanted hosts. This command does not display HA version and the RMLIB details.

Switches

–op <op_string>	**Required.** Specify the task to be performed. Not necessary if `-list` is used. `xpinfo_req`: indicates that the P9000INFO data must be sent to the management station. `ha_rem`: requests the management station to remove this host agent from its database.
–ha <hostagent>	**Required.** Specify the host agent system. This can either be a host name or an IP address. Not necessary if `-list` is used.
–list	Lists the host configuration data that is stored on the management station.
–L	The output from the `-list` switch must be labeled, but delimited.
–d <char>	Specify the character for delimited output.
–hr	Displays data in a readable form.
–auth <user:passwd>	Specify a user name and password pair in the format user name:password.
–ms <URL>	Specify the address of a management station in the format `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`.
–?	Prints the usage statement.

Example

```
hostcfg -list -hr
```

USERHOSTCFG

Syntax

```
[-filein in_name | -streamin | -database colon:separated:no_spaces]
-fileout out_name -streamout -header -send -ms management_station_name
[-auth user:password | -pf password_file] -?
```

Supported disk array types

XP and P9000 disk arrays

Description

Enables you to request the host configuration information.

Switches

–filein <in_name>	When repeated, only uses the last in_name.
–streamin	The default input value.
–database <colon:separated:no_spaces>	A list of host names. TIP: The word "all" by itself, without the quotation marks, is used to send each host's information.
–fileout <out_name>	When repeated, uses the last out_name. TIP: This parameter is effective only if all the input records are parsed without error.
–streamout	Outputs to the console unless redirected elsewhere. TIP: This parameter is effective only if all the input records are parsed without error.
–header	Applies only when an output is selected. TIP: The software ignores an incoming header line in an input file or stream-in.
–send	Sends the configuration records to the management station. TIP: This parameter is effective only if all the input records are parsed without error.

–ms <management_station_name>	In the form http://servername or https://servername. TIP: You can use https if your management station is set up for SSL.
–auth <user:password>	The user name and password are the same as for the Configuration tab.
–pf <password_file>	Can be used in place of `–auth`. NOTE: The password file must be created using the `encrypt` command only.
–?	Displays the usage message; no parsing or sending is performed.

NOTE:

- Only one input source is accepted in one invocation.
- Output rows to the file or screen have fields separated by commas.
- Either `–auth` or `–pf` is accepted, but not both. The password file must be created using only the `encrypt` command.
- There is no output to the file or to the screen unless requested.
- The commands are not case-sensitive.
- The order of command options does not matter.
- If command options are not provided, the streamed-in input is checked.
- For validity with no output presented or sent to the management station.

RAIDGRP

Syntax

```
raidgrp -dkc <serial #> -rg <raid group> [-auth <user:passwd>] [-ms
<URL>][-L] [-d<char>] [-hr] [-?] [-pf <password file>]
```

Supported disk array types

XP and P9000 disk arrays

Description

Displays information about RAID Groups of the array such as the RAID level, ACP pair, control unit, and disk mechanics information.

Switches

–dkc <serial #>	**Required.** Specify the array serial number.
–rg <raid group>	**Required.** Specify the RAID Group for which you want output displayed.

–ms <URL>	Specify the address of a management station in the format `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`.
–auth <user:passwd>	Specify a user name and password pair in the format user name:password.
–pf <password file>	Can be used in place of `-auth`. NOTE: The password file must be created using the encrypt command only.
–d <char>	Specify the delimiter for the delimited output.
–hr	Displays data in a readable format.
–?	Prints the usage statement.

Examples

```
raidgrp -dkc 30143 -rg 1-1 -hr
raidgrp -dkc 10055 -rg 1-1 -L
raidgrp -dkc 127 -rg 1-1
raidgrp -dkc 10055 -rg "1-5 1-6"
```

NOTE:

When using the RAIDGRP command on concatenated RAID Groups, the RAID Groups must be in double quotes.

EVNTLOG

Syntax

```
evntlog [-auth <user:passwd>] [-ms <URL>] [-L] [-d<char>] [-hr] [-?]
[-type <type ID>] [-sev <severity>] [-st <mm.dd.yyyy hh:mm:ss>] [-et
<mm.dd.yyyy hh:mm:ss>]
```

Supported disk array types

XP and P9000 disk arrays

Description

Enables you to view a log or record for all the events generated by P9000 Performance Advisor. This command also enables you to filter the event records based on the severity and type of events.

Switches

–type <type ID>	Specify the type of the event.

–sev <severity>	Specify the severity of the event, range 1 - 10.
–st <mm.dd.yyyy hh:mm:ss>	Specify the start time and date of the event to display.
–et<mm.dd.yyyy-hh:mm:ss>	Specify the end time and date of the event to display.
–ms <URL>	Specify the address of a management station in the format `<http://path.to.managementstation:<port>>` or `<https://path.to.managementstation>`.
–auth <user:passwd>	Specify a user name and password pair in the format user name:password.
–pf	Can be used in place of `-auth`. NOTE: The password file must be created using the encrypt command only.
–d <char>	Specify the delimiter for delimited display.
–hr	Displays data in a readable format.
–?	Prints the usage statement.

Examples

```
evntlog -hr
```

```
evntlog -L
```

USERGRP

Syntax

```
usergrp [-auth <user:passwd>] [-ms <URL>] [-L] [-d<char>] [-hr] [-?]
-items <item list> | -list | -details | -rem [-name <group name>] [-gid
<group id>]
```

Supported disk array types

XP and P9000 disk arrays

Description

Enables you to create, list, and remove user-defined groups to which you can add LDEVs whose performance you want to monitor.

Switches

–items <item list>	**Required.** Specify the `csv` list of items to be added to the user group. Each item is in the form `dkc+host::ldevlist`, where: `dkc+host` is a DKC and host combination. `ldevlist` consists of LDEVs separated by a plus (+) character or LDEV ranges (2 LDEVs separated by a hyphen [-]). The `–items` cannot be used with `-list, -details,` or `–rem`.
–list	**Required.** Lists all the groups. Cannot be used with `-name, -details,` or `-items`.
–details	**Required.** Shows the details for one group. Either `–name` or `–gid` is required.
–rem <group name>	**Required.** Removes a particular user-defined group. Either `–name` or `–gid` is required.
–name <group name>	Specify the name of the group to define or list details.
–gid <group id>	Specify the ID number for this group.
–ms <URL>	Specify the address of a management station in the format `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`.
–auth <user:passwd>	Specify a user name and password pair in the format user name:password.
–pf	Can be used in place of `–auth`. NOTE: The password file must be created using the `encrypt` command only.
–d <char>	Specify the delimiter for delimited display.
–L	Displays column headers with the delimiter.
–hr	Displays data in a readable format.
–?	Prints the usage statement.

Examples

```
usergrp -items 10033::CLPR1-CLPR2 name custom1
usergrp -details -hr -gid 1
usergrp -details -L -gid 1
usergrp -details -gid 1
```

NOTE:

If an array is connected to a host agent that is running on the HP-UX 11i v3 operating system, the DSF is displayed in a new format. A legacy DSF is displayed in parenthesis next to the new format.

For an XP24000 array with P9000 Thin Provisioning and P9000 Snapshot under RAID Group, the following output is displayed:

- For P9000 Thin Provisioning:

  `THP-PID<pool ID>`

- For P9000 Snapshot:

  `SNAP-PID<pool ID>.`

DBCONFIG

Syntax

```
dbconfig [-auth <user:passwd>] [-ms <URL>] [-L] [-d<char>] [-hr] [-?]
purge | -list | -loglvl <severity> [-days <days>] [-dkc <serial number>]
[-et <mm.dd.yyyy hh:mm:ss>]
```

Supported disk array types

XP and P9000 disk arrays

Description

Enables you to modify the data retention time, set log levels at or above a particular severity, purge data based on an array or on a particular date, archive or import performance data, increase the database size, and set the management station's time zone.

Switches

NOTE:

At a given point in time, only one of the “Required” switches can be used.

–purge	**Required.** Purges data from the management station.
–loglvl	**Required.** Sets the level of log messages to store. It is followed by a number between 1 and 10.
–list	**Required.** Retrieves a list of current database settings.
–days	If used with `-purge`, indicates the day previous to the current day at which to begin purging data. Cannot be used with `-loglvl` or `-list`.
–dkc <serial number>	Specify the array serial number. Must not be used with `-loglvl` or `-list`.

–et <mm.dd.yyyy hh:mm:ss>	Specify the time and date of the last stored data collection. Cannot be used with `-loglvl` or `-list`.
–ms <URL>	Specify the address of a management station in the format `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`.
–auth <user:passwd>	Specify a user name and password pair in the format user name:password.
–pf	Can be used in place of `-auth`. NOTE: The password file must be created using the `encrypt` command only.
–d <char>	Specify the delimiter for delimited display.
–L	Displays column headers with the delimiter.
–hr	Displays data in a readable format.
–?	Prints the usage statement.

Examples

```
dbconfig -list -hr
```

```
dbconfig -list -L
```

```
dbconfig -list
```

AGGREGATE

Syntax

```
aggregate [-items <item list>] [-L] [-hr] [-a] [-st<MM.DD.YYYY hh:mm:ss>]
[-et<MM.DD.YYYY hh:mm:ss>] [-?]
```

The format to list items for the P9000 Thin Provisioning metrics for the aggregate command is:

```
<array_sl_no>:<THP Pool ID>
```

The format to list items for the P9000 Snapshot metrics for the aggregate command is:

```
<array_sl_no>:<Snapshot Pool ID>
```

The format to list the average and maximum values for the samples in the time period specified by the `-st` and `-et` values is as follows:

```
aggregate [-a] [-st<MM.DD.YYYY hh:mm:ss>] [-et<MM.DD.YYYY hh:mm:ss>]
```

Supported disk array types

XP and P9000 disk arrays

Description

Displays the performance data of a given metric for a specified time interval. Based on the metric used, information can be requested for an array, RAID Group, or LDEV.

> **IMPORTANT:**
> Since, the ACP/DKA MPs are moved to the MP blades in the P9000 disk arrays, their MP utilization metrics are not applicable for the P9000 disk arrays and the data for the same is not displayed.

–items<item list>	**Required.** Specify a CSV list of DKCs, metrics, and items on the DKC for which you want the aggregated data. It uses the form Metric:dkc serial:itemlist, or Metric:User Defined Group. Item list: A list of LDEVs, ports, ACP Pairs, RAID Groups, or ranges of each (except for RAID Groups) separated by a "+". Ranges are in the form lowitem-highitem separated by a "-". Items must be entered in their string form (case insensitive, no "-" within the port). For example: ldev_io_total:20031:1:f4-1:f9+1:fc port_io_max:10033:CL1E The RAID Groups format is: `<array_sl_no>:<raid group>` For example: `raidgrp_io_total:10278:1-1`
–st <MM.DD.YYYY hh:mm:ss>	Specify the lower bound on time.
–et <MM.DD.YYYY hh:mm:ss>	Specify the upper bound on time.
–ms <URL>	Specify the address of a management station in the format `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`.
–auth <user:pass>	Specify a user name and password pair in the form user name:password.
–L	Specify the labeled and the delimited output data.
–hr	Displays data in a readable format.
–a	The output average and maximum values for the returned samples.
–d<delim>	Specify the delimiter for the delimited output.
–display	Prints all of the supported metrics.
–?	Prints the usage statement.

For a RAIDGRP_UTIL_OVRALL metric, if you want to view the average and maximum values on a monthly, weekly, daily, or hourly basis, following are the options that can be used with `–a` in the Aggregate command (instead of the `–st` and `–et` options):

Command	Syntax

Monthly	`aggregate -a -items RAIDGRP_UTIL_OVRALL:<DKC>:<RAID_GROUP> —m yyyy mm`
Weekly	`aggregate -a -items RAIDGRP_UTIL_OVRALL:<DKC>:<RAID_GROUP> —w mm.dd.yyyy` NOTE: Irrespective of the month and year, the day that you specify must correspond to a Sunday.
Daily	`aggregate -a -items RAIDGRP_UTIL_OVRALL:<DKC>:<RAID_GROUP> —day mm.dd.yyyy`
Hourly	`aggregate -a -items RAIDGRP_UTIL_OVRALL:<DKC>:<RAID_GROUP> —h mm.dd.yyyy hour` NOTE: The hour that you specify must be in a 24 hour format.

where:

-m	Indicates the month in which the RAID Group utilization is requested. This option must be used with–a for retrieving the monthly overall RAID Group utilization values. Specify the month in mm format and year in yyyy format.
-w	Indicates the week in which the RAID Group utilization is requested. This option must be used with–a for retrieving the weekly overall RAID Group utilization values. Specify the week in mm.dd.yyyy format. The day that you specify must correspond to a Sunday.
-day	Indicates the day on which the RAID Group utilization is requested. This option must be used with–a for retrieving the daily overall RAID Group utilization values.
-h	Indicates the hour for which the RAID Group utilization is requested. This option must be used with–a for retrieving the hourly overall RAID Group utilization values. Specify the date in mm.dd.yyyy format, and the hour in 24 hours format.

The Overall RAID Group Utilization Average is the average value (percent) of the set of utilization samples returned for the requested time period (sum of sample values/number of samples).

The Overall RAID Group Utilization Maximum is the maximum value (percent) in the set of utilization samples returned for the requested time period.

NOTE:

Install Auto LUN P9000 and enable the monitor on the XP1024/XP128 arrays to make the RAID Group Utilization metrics available on the arrays.

The following metrics are available:

LDEV_IO_TOTAL Total LDEV IOs/sec
LDEV_IO_RAND_TOTAL - Total Random LDEV IOs/sec
LDEV_IO_RAND_READ LDEV Random IO reads/sec
LDEV_IO_RAND_READCACHE LDEV Random IO Reads/sec from cache
LDEV_IO_RAND_WRITE LDEV Random IO writes/sec
LDEV_IO_SEQ_TOTAL - LDEV Total Sequential Ldev IOs/sec
LDEV_IO_SEQ_READ LDEV Sequential IO reads/sec
LDEV_IO_SEQ_READCACHE LDEV Sequential IO reads/sec from cache
LDEV_IO_SEQ_WRITE - LDEV Sequential IO writes/sec
LDEV_IO_CFW_TOTAL - LDEV CFW total IOs/sec
LDEV_IO_CFW_READ - LDEV CFW read IOs/sec
LDEV_IO_CFW_READCACHE - LDEV CFW read IOs/sec from cache
LDEV_IO_CFW_WRITE - LDEV CFW write IOs/sec
LDEV_IO_CFW_WRITECACHE - LDEV CFW write IOs/sec from cache
LDEV_IO_DFW_COUNT - LDEV DFW total IOs
LDEV_IO_DFW_NRML_COUNT - LDEV DFW normalized IOs
LDEV_IO_DFW_SEQ_ACCESS - LDEV DFW sequential access
LDEV_IO_DFW_WRITE_HITS - LDEV DFW writes found in cache
LDEV_IO_DFW_SA_WRITE_HITS - LDEV CFW sequential access writes found in cache
LDEV_IO_CACHEMODE_INHIBIT - LDEV cachemode inhibit IOs
LDEV_IO_CACHEMODE_BYPASS - LDEV cachemode bypass IOs

LDEV_MB_TOTAL - LDEV total MB/sec
LDEV_MB_RAND_TOTAL - LDEV total random MB/sec
LDEV_MB_RAND_READ - LDEV random read MB/sec
LDEV_MB_RAND_WRITE - LDEV random write MB/sec
LDEV_MB_SEQ_TOTAL - LDEV sequential total MB/sec
LDEV_MB_SEQ_READ - LDEV sequential read MB/sec
LDEV_MB_SEQ_WRIT - LDEV sequential write MB/sec
LDEV_BACKEND_SEQ_READ - LDEV backend sequential reads (tracks)
LDEV_BACKEND_NONSEQ_READ - LDEV backend non-sequential reads (tracks)
LDEV_BACKEND_WRITE - LDEV backend writes (tracks)
PORT_IO_MAX - Port maximum IO/sec
PORT_IO_MIN - Port minimum IO/sec
PORT_IO_AVE - Port average IO/sec
PORT_MB_MAX - Port maximum MB/sec
PORT_MB_MIN - Port minimum MB/sec
PORT_MB_AVE - Port average MB/sec

ACP_PAIR_IO_TOTAL - ACP pair total IO/sec
ACP_PAIR_IO_RTOTAL - ACP pair total random IO/sec
ACP_PAIR_IO_RREAD - ACP pair random read IO/sec
ACP_PAIR_IO_RREAD_HITS - ACP pair random read IO/sec in cache
ACP_PAIR_IO_RWRITE - ACP pair random write IO/sec
ACP_PAIR_IO_STOTAL - ACP pair total sequential IO/sec
ACP_PAIR_IO_SREAD - ACP pair sequential read IO/sec
ACP_PAIR_IO_SREAD_HITS - ACP pair sequential read IO/sec in cache
ACP_PAIR_IO_SWRITE - ACP pair sequential write IO/sec
ACP_PAIR_MB_TOTAL - ACP pair total MB/sec
ACP_PAIR_MB_RTOTAL - ACP pair total random MB/sec
ACP_PAIR_MB_RREAD - ACP pair random read MB/sec
ACP_PAIR_MB_RWRITE - ACP pair random write MB/sec
ACP_PAIR_MB_STOTAL - ACP pair total sequential MB/sec
ACP_PAIR_MB_SREAD - ACP pair sequential read MB/sec
ACP_PAIR_MB_SWRITE - ACP pair sequential write MB/sec
ACP_PAIR_UTIL_TOTAL - ACP pair utilization total
ACP_PAIR_UTIL_MP0 - ACP pair MP 0 utilization
ACP_PAIR_UTIL_MP1 - ACP pair MP 1 utilization
ACP_PAIR_UTIL_MP2 - ACP pair MP 2 utilization
ACP_PAIR_UTIL_MP3 - ACP pair MP 3 utilization
ACP_PAIR_UTIL_MP4 - ACP pair MP 4 utilization
ACP_PAIR_UTIL_MP5 - ACP pair MP 5 utilization
ACP_PAIR_UTIL_MP6 - ACP pair MP 6 utilization
ACP_PAIR_UTIL_MP7 - ACP pair MP 7 utilization
ACP_PAIR_UTIL_LEFT_MP0 - ACP pair MP 0 utilization left side
ACP_PAIR_UTIL_LEFT_MP1 - ACP pair MP 1 utilization left side
ACP_PAIR_UTIL_LEFT_MP2 - ACP pair MP 2 utilization left side
ACP_PAIR_UTIL_LEFT_MP3 - ACP pair MP 3 utilization left side
ACP_PAIR_UTIL_LEFT_MP4 - ACP pair MP 4 utilization left side
ACP_PAIR_UTIL_LEFT_MP5 - ACP pair MP 5 utilization left side
ACP_PAIR_UTIL_LEFT_MP6 - ACP pair MP 6 utilization left side
ACP_PAIR_UTIL_LEFT_MP7 - ACP pair MP 7 utilization left side
ACP_PAIR_UTIL_RIGHT_MP0 - ACP pair MP 0 utilization right side
ACP_PAIR_UTIL_RIGHT_MP1 - ACP pair MP 1 utilization right side
ACP_PAIR_UTIL_RIGHT_MP2 - ACP pair MP 2 utilization right side
ACP_PAIR_UTIL_RIGHT_MP3 - ACP pair MP 3 utilization right side
ACP_PAIR_UTIL_RIGHT_MP4 - ACP pair MP 4 utilization right side
ACP_PAIR_UTIL_RIGHT_MP5 - ACP pair MP 5 utilization right side
ACP_PAIR_UTIL_RIGHT_MP6 - ACP pair MP 6 utilization right side
ACP_PAIR_UTIL_RIGHT_MP7 - ACP pair MP 7 utilization right side
ACP_PAIR_BE_STRACKS - ACP pair backend sequential tracks
ACP_PAIR_BE_NON_STRACKS - ACP pair backend non-sequential tracks
ACP_PAIR_BE_WTRACKS - ACP pair backend tracks written

RAIDGRP_IO_TOTAL - RAID Group total IO/sec
RAIDGRP_IO_RTOTAL - RAID Group total random IO/sec
RAIDGRP_IO_RREADS - RAID Group random read IO/sec
RAIDGRP_IO_RREAD_HITS - RAID Group random read IO/sec in cache
RAIDGRP_IO_RWRITES - RAID Group random write IO/sec
RAIDGRP_IO_STOTAL - RAID Group sequential total IO/sec
RAIDGRP_IO_SREADS - RAID Group sequential read IO/sec
RAIDGRP_IO_SREAD_HITS - RAID Group sequential read IO/sec in cache
RAIDGRP_IO_SWRITES - RAID Group sequential write IO/sec
RAIDGRP_MB_TOTAL - RAID Group total MB/sec
RAIDGRP_MB_RTOTAL - RAID Group total random MB/sec
RAIDGRP_MB_RREADS - RAID Group random read MB/sec
RAIDGRP_MB_RWRITES - RAID Group random write MB/sec
RAIDGRP_MB_STOTAL - RAID Group sequential total MB/sec
RAIDGRP_MB_SREADS - RAID Group sequential read MB/sec
RAIDGRP_MB_SWRITES - RAID Group sequential write MB/sec
RAIDGRP_BE_SREADS - RAID Group backend sequential reads (tracks)
RAIDGRP_BE_NON_SREADS - RAID Group backend non-sequential reads (tracks)
RAIDGRP_UTIL_OVRALL – Overall RAID Group utilization (percent)
RAIDGRP_BE_WRITES - Raid Group backend writes (tracks)
SM_CHIP_FBUS_HI_UTIL - Front end bus utilization
SM_ACP_FBUS_LO_UTIL - Front end bus utilization
CM_CHIP_MBUS_HI_UTIL - Back end bus utilization
CM_ACP_MBUS_LO_UTIL - Back end bus utilization

P9000 Thin Provisioning metrics:
THP_IO_TOTAL Total IO/sec of all LDEVs belonging to a particular P9000 Thin Provisioning (THP) Pool
THP_IO_RTOTAL - Total random IO/sec of all LDEVs belonging to a particular
THP Pool THP_IO_RREADS - Random read IO/sec of all LDEVs belonging to a particular
THP Pool THP_IO_RREAD_HITS - Random read IO/sec in cache of all LDEVs belonging to a particular THP Pool
THP_IO_RWRITES - Random write IO/sec of all LDEVs belonging to a particular
THP Pool THP_IO_STOTAL - Sequential total IO/sec of all LDEVs belonging to a particular THP Pool
THP_IO_SREADS - Sequential read IO/sec of all LDEVs belonging to a particular THP Pool
THP_IO_SREAD_HITS - Sequential read IO/sec in cache of all LDEVs belonging to a particular THP Pool
THP_IO_SWRITES - Sequential write IO/sec of all LDEVs belonging to a particular THP Pool
THP_MB_TOTAL - Total MB/sec of all LDEVs belonging to a particular THP Pool
THP_MB_RTOTAL - Total random MB/sec of all LDEVs belonging to a particular THP Pool
THP_MB_RREADS - Random read MB/sec of all LDEVs belonging to a particular THP Pool
THP_MB_RWRITES - Random write MB/sec of all LDEVs belonging to a particular THP Pool
THP_MB_STOTAL - Sequential total MB/sec of all LDEVs belonging to a particular THP Pool
THP_MB_SREADS - Sequential read MB/sec of all LDEVs belonging to a particular THP Pool
THP_MB_SWRITES - Sequential write MB/sec of all LDEVs belonging to a particular THP Pool

Snapshot metrics:
SNAP_IO_TOTAL Total IO/sec of all LDEVs belonging to a particular Snapshot Pool
SNAP_IO_RTOTAL - Total random IO/sec of all LDEVs belonging to a particular Snapshot Pool
SNAP _IO_RREADS - Random read IO/sec of all LDEVs belonging to a particular Snapshot Pool
SNAP_IO_RREAD_HITS - Random read IO/sec in cache of all LDEVs belonging to a particular Snapshot Pool
SNAP_IO_RWRITES - Random write IO/sec of all LDEVs belonging to a particular Snapshot Pool
SNAP_IO_STOTAL - Sequential total IO/sec of all LDEVs belonging to a particular Snapshot Pool
SNAP_IO_SREADS - Sequential read IO/sec of all LDEVs belonging to a particular Snapshot Pool
SNAP_IO_SREAD_HITS - Sequential read IO/sec in cache of all LDEVs belonging to a particular Snapshot Pool
SNAP_IO_SWRITES - Sequential write IO/sec of all LDEVs belonging to a particular Snapshot Pool
SNAP_MB_TOTAL - Total MB/sec of all LDEVs belonging to a particular Snapshot Pool
SNAP_MB_RTOTAL - Total random MB/sec of all LDEVs belonging to a particular Snapshot Pool
SNAP_MB_RREADS - Random read MB/sec of all LDEVs belonging to a particular Snapshot Pool
SNAP_MB_RWRITES - Random write MB/sec of all LDEVs belonging to a particular Snapshot Pool
SNAP_MB_STOTAL - Sequential total MB/sec of all LDEVs belonging to a particular Snapshot Pool
SNAP_MB_SREADS - Sequential read MB/sec of all LDEVs belonging to a particular Snapshot Pool
SNAP_MB_SWRITES - Sequential write MB/sec of all LDEVs belonging to a particular Snapshot Pool

NOTE:

The following metrics are applicable for mainframe volumes only:

CFW_TOTAL LDEV IO type
CFW_READ LDEV IO type
CFW_READ_CACHE LDEV IO type
CFW_WRITE LDEV IO type
CFW_WRITE_CACHE LDEV IO type
DFW_COUNT LDEV IO type
DFW_NRML_COUNT LDEV IO type
DFW_SEQ_ACCESS LDEV IO type
DFW_WRITE_HITS LDEV IO type
DFW_SA_WRITE_HITS LDEV IO type

Examples

```
aggregate -items ldev_io_total:10033:CLPR2 -st

aggregate -items LDEV_MB_TOTAL:10055:06:00 -hr

aggregate -items LDEV_BACKEND_SEQ_READ:10055:06:00 -hr

aggregate -items port_io_max:50129:CL1E -st 09.16.2003 05:00:00 -et

aggregate -items port_io_max:50129:CL1E-CL1G -st 09.16.2003 05:00:00 -et

aggregate -items PORT_MB_MAX:10055:CL1E -hr

aggregate -items ACP_PAIR_IO_TOTAL:10009:AUMU -hr

aggregate -items ACP_PAIR_MB_TOTAL:10009:AUMU -hr

aggregate -items ACP_PAIR_UTIL_TOTAL:10009:AUMU -hr

aggregate -items ACP_PAIR_BE_STRACKS:10009:AUMU -hr
```

```
aggregate -items ldev_io_total:Fred

aggregate -items ldev_io_total:Fred L

aggregate -items ldev_io_total:Fred hr

aggregate -items ldev_io_total:20031:1:f4-1:f9+1:fc

aggregate -items ldev_io_total:20031:1:f4-1:f9+1:fc -L

aggregate -items ldev_io_total:20031:1:f4-1:f9+1:fc –hr

aggregate -items RAIDGRP_IO_SREADS:10851:1-1 -hr

aggregate -items RAIDGRP_MB_TOTAL:10055:1-1 -hr

aggregate -items RAIDGRP_BE_SREADS:10009:1-1 -hr

aggregate -items SM_CHIP_FBUS_HI_UTIL:10090 -hr

aggregate -items SM_ACP_FBUS_LO_UTIL:10090 -hr

aggregate -items CM_CHIP_MBUS_HI_UTIL:10090 –hr

aggregate -items CM_ACP_MBUS_LO_UTIL:10090 –hr

aggregate -items THP_IO_SREADS:10001:1 -hr

aggregate -items SNAP_IO_SREADS:10001:10 -hr

aggregate –items RAIDGRP_UTIL_OVRALL:10227:1-1 -hr

aggregate –items RAIDGRP_UTIL_OVRALL:10227:1-1 -st 04.01.2007 00:00:00
–et 04.01.2007 01:40:00 -L

aggregate –items RAIDGRP_UTIL_OVRALL:10227:1-1 -st 04.01.2007 00:00:00
–et 04.01.2007 00:40:

aggregate -a -items RAIDGRP_UTIL_OVRALL:10130:1-1 -h 12.11.2007 10 -hr

aggregate -a -items RAIDGRP_UTIL_OVRALL:10130:1-1 -day 12.11.2007 –hr

aggregate -a -items RAIDGRP_UTIL_OVRALL:10130:1-1 –w 12.09.2007 –hr

aggregate -a -items RAIDGRP_UTIL_OVRALL:10130:1-1 -m 2007 11 –hr
```

AGGREGATE TIER:IOPS

Syntax

```
aggregate -a -items TIER_IOPS:<DKC>:{<Pool ID>|ALL} {-st} <Date>

aggregate -a -items TIER_IOPS:<DKC>:{<Pool ID>|ALL}
```

Pool ID	Pool ID of the Smart pool for which you want to view the tier I/O per second data.
ALL	Option to view I/O per second data for all the Smart pool tiers.
-st <Date>	Optional. Indicates the Smart pool monitoring cycle start time and corresponds to the SVP date and time stamp. If start time is not provided, the latest available data is retrieved and displayed.

Description

Provides the Tier I/O per second data for the Smart pools.

Examples

aggregate -a -items TIER_IOPS:10090:1 –st 04.20.2011 10:00:00

aggregate -a -items TIER_IOPS:10090:1

PROPUTILITY

Syntax

```
proputility [-i] [-ms <management station>] [-rauth <report
username:password>]
[-cauth <config username:password>]
```

Supported disk array types

XP and P9000 disk arrays

Description

Enables you to configure the properties file, which in turn enables you to integrate other software and shell scripts.

Switches

–i	Interactive mode. When prompted, provide the URL of the management station.
–rauth <report user-name:password>	Specify the report user name and password pair. The default value for this entry is `paxp:xparray`.
–ms <management station>	Specify the management station ID or IP address. The default value for this entry is `localhost`.
–cauth <config user-name:password>	Specify the configuration user name and password pair. The default value for this entry is `confmonxp:redstar`.

In the interactive mode, pressing "Enter" for each entry retains the current or default values.

Example

```
proputility -i
```

THP

Syntax

```
thp -dkc <serial #> [-pid <thp pool id>] [-auth <user:passwd>] [-ms <URL>]
[-L] [-d<char>] [-hr] [-?] [-pf <password file>]
```

Supported disk array types

XP and P9000 disk arrays

Description

Enables you to obtain THP Pool occupancy metrics in percentage.

Switches

–dkc <serial #>	**Required.** Specify the array serial number.
–pid <thp pool id>	Specify the THP pool ID for which you want output displayed.
–ms <URL>	Specify the address of a management station in the format `<http://path.to.managementstation:<port>>` or `<https://path.to.managementstation>`.
–auth <user:passwd>	Specify a user name and password pair in the format user name:password.
–pf <password file>	Can be used in place of -auth. NOTE: The password file must be created using the `encrypt` command only.
–d <char>	Specify the delimiter for delimited display.
–hr	Displays readable output.
–?	Prints the usage statement.

NOTE:

The `–st` and `–et` options are supported with the `–pid` option only. The array serial number and `–dkc` are required elements.

Examples

```
thp -dkc <array sn no> -hr
```

```
thp -dkc 10090 -pid 1 -hr
```

SNAPSHOT

Syntax

```
snapshot -dkc <serial #> [-pid <snapshot pool id>] [-auth <user:passwd>]
[-ms <URL>] [-L] [-d<char>] [-hr] [-?] [-pf <password file>]
```

Supported disk array types

XP and P9000 disk arrays

Description

Enables you to obtain Snapshot pool related information. This command provides the Snapshot pool occupancy value in percentage. This command does not display the snapshot pools unless snapshot pool is associated with any Virtual volume.

Switches

–dkc <serial #>	**Required.** Specify the array serial number.
–ms <URL>	Specify the address of a management station in the format `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`.
–auth <user:passwd>	Specify a user name and password pair in the format user name:password.
–pf <password file>	Can be used in place of `-auth`. NOTE: The password file must be created using the encrypt command only.
–d	Specify the delimiter for delimited display.
–hr	Displays data in a readable format.
–?	Prints the usage statement.

NOTE:

The `-st` and `-et` options are supported with the `-pid` option only.

Examples

```
snapshot -dkc <array sn no> -hr
```

```
snapshot -dkc <array sn no> -L
```

```
snapshot -dkc <array sn no> -pid 1
```

```
snapshot -dkc <array sn no> -pid 1 st 02.23.2006 16:00:00 et 02.23.2006
16:15:00
```

JNL

Syntax

```
jnl -dkc <serial #> [-jid <journal pool id>] [-auth <user:passwd>] [-ms
<URL>] [-L] [-resp] [-d <char>] [-hr] [-?] [-pf <password file>] [-st
<MM.DD.YYYY hh:mm:ss>] [-et <MM.DD.YYYY hh:mm:ss>]
```

Supported disk array types

XP and P9000 disk arrays

Description

Enables you to obtain Continuous Access Journal related information. This command provides the following Continuous Access Journal information:

JID — Displays the journal group ID
MU — Displays the mirror descriptions on journal group
CTG —Displays the CT group ID for the journal group
JNLS —Displays the following status in the journal group

Primary Journal:

String	Status value	Constant value
JSTAT_SMPL	Journal pool is not used in a journal group.	0
JSTAT_PJNN	This means P(S)vol Journal is Normal Normal.	1
JSTAT_PJSN	This means P(S)vol Journal is Suspend Normal.	2
JSTAT_PJNF	This means P(S)vol Journal is Normal Full.	3
JSTAT_PJSF	This means P(S)vol Journal is Suspend Full.	4
JSTAT_PJSE	This means P(S)vol Journal is Suspend Error including link failure.	5

Secondary Journal:

String	Status value	Constant value
JSTAT_SJNN	This means S(S)vol Journal is Normal Normal	17
JSTAT_SJNF	This means S(S)vol Journal is Suspend Normal.	18
JSTAT_SJSN	This means S(S)vol Journal is Normal Full.	19
JSTAT_SJSF	This means S(S)vol Journal is Suspend Full.	20
JSTAT_SJSE	This means S(S)vol Journal is Suspend Error including Link failure.	21

AP	Displays the actual number of paths.
U(%)	Displays the usage rate of the journal pool in percentage format.
Q-Marker	Displays the sequence number for the journal group ID, called the Q-marker.
Q-CNT	Displays the number of remaining Q-Markers within each journal volume.
Num	Displays the number of volumes configured for the journal group.
LDEV#	Displays the ID of the volume configured for the journal group.
Avg Read	Displays the average read response time of the volume configured for the journal group.
Max Read	Displays the maximum read response time of the volume configured for the journal group.
Avg Write	N/A
Max Write	N/A

NOTE:
Average and Maximum write metrics are not supported for the continuous access journal pool LDEVs.

Switches

—dkc <serial #>	**Required**: Specify the array serial number.
–jid <journal pool id>	Specify the journal ID.
–resp	The journal LDEV's read and write response time.
–st <mm.dd.yyyy hh:mm:ss>	Specify the start time in the format mm.dd.yyyy hh:mm:ss.
–et <mm.dd.yyyy hh:mm:ss>	Specify the end time in the format mm.dd.yyyy hh:mm:ss.
–ms <URL>	Specify the address of a management station in the format `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`.
–auth <user:passwd>	Specify a user name and password pair in the format user name:password.
–pf <password file>	Can be used in place of `–auth`. NOTE: The password file must be created using the encrypt command only.
–d<delim>	Specify the delimiter for delimited display.
–L	Display column headers with delimited data.
–hr	Displays data in a human readable format.
–?	Prints this usage statement.

NOTE:

The -st and -et options are supported with the -jid option only.

Examples

```
jnl -hr -dkc 10001
```

```
jnl -hr -dkc 10001 -jid 0
```

```
jnl -hr -dkc 10001 -jid 0 -st 4.5.2007 03:00:00 -et 4.5.2007 03:10:00
```

```
jnl -hr -dkc 10001 -jid 0 -st 4.5.2007 03:00:00 -et 4.5.2007 03:10:00
-resp
```

EXPORTDB

Syntax

```
exportdb [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>] [-st
<mm.dd.yyyy hh:mm:ss>] [-et <mm.dd.yyyy hh:mm:ss>] [-file <filename>]
-dkc <serial #> -dver <XXXXXX> [-?]
```

Supported disk array types

XP and P9000 disk arrays

Description

Use the ExportDB command to export data, for charting or graphing, and including the Ext-LUN information to a data visualization program, such as Microsoft Excel. The output of the ExportDB command for the dkc performance data contains the maximum configuration of an XP12000 array, even though the XP10000 array has a maximum of 4 CHIPs and 2 ACPs. This is because there are 16 CHIPs and 8 ACPs columns. However, if the column is not applicable for XP10000, it displays the text "Invalid" as a column heading. For mix Printed Circuit Boards (PCBs), the column displays the label "Invalid Mp" as a column heading for MPs 4 to 7.

IMPORTANT:

- If you export data for a P9000 disk array, you can also view the average utilization percentage of an MP blade and the LDEV that is currently assigned to the MP blade. The average percentage of utilization is calculated as the utilization of all the individual processors in the MP blade. The file also includes the following details:
  - The MP blade IDs, the cluster # and the blade locations for the MP blades.
  - The processors on an MP blade and their utilization percentage for the selected duration.
  - The processing types and the respective MP busy time.

    The MP busy time indicates the time taken by an MP blade to process the request it receives from the associated processing type.
- The export DB file for LDEV displays an additional **Current MP** column. This column displays the current MP blade for each LDEV record. The MP blade ID includes the cluster # and the blade location for the MP blade.
- P9000 Performance Advisor supports multiple data collection. For the `exportdb` command to be successful, ensure that the RAID Groups are part of a single schedule only.

  Example 1. Schedule 1

  Components selected:

  RAID Group: All the available RAID Groups

  Frequency of collection: 1 min

  Example 2. Schedule 2

  Components selected:

  DKC

  Port: All the available ports.

  Frequency of collection: 30 mins (for the above components)

Switches

–d<delim>	Specify the delimiter for delimited output. There is no space between -d and the delimiter character.
–L	Specify the labeled and delimited output data.
–hr	Displays data in a readable format.
–ms <URL>	Specify the address of the management station in the form of `<http://path.to.managementstation:<port>> or <https://path.to.managementstation>`
–auth <user:passwd>	Specify a user name and password pair in the format user name:password.
– dkc <serial #>	**Required**. Specify the array serial number.

–st <mm.dd.yyyy hh:mm:ss>	**Required**. Specify the start time in the format mm.dd.yyyy hh:mm:ss.
–et <mm.dd.yyyy hh:mm:ss>	**Required**. Specify the end time in the format mm.dd.yyyy hh:mm:ss.
–file <filename>	Specify the filename to send the data that is retrieved. (If the file exists, the data is appended.)
–dver <XXXXXX>	Specify the version. The 010500 and 020000 versions are currently supported. The 010500 version is the default. XP12000/XP10000 or later must use `-dver 020000`. Enter 020000 to display the EXT-LUN information. This creates the following output files: ldev_<filename> dkc_<filename> port_<filename> clpr_<filename>
–resp <option>	Specify the option to display information. read – for ldev read response time write – for ldev write response time all – for ldev read and write response time Can be used only with the `-dver` option. The `-dver` must be 020000.
–rgutil	The option to display the RAID Group utilization. The `-dver` must be 020000. This option can be used with the `resp` option.
–jnl	The option to display all the LDEVs that belong to a journal.
–?	Prints the usage statement.

Examples

```
exportdb -dkc 10055 -st 09.14.2006 12:00:00 -et 09.14.2006 13:00:00 -dver
020000 -file test.csv -resp all
```

```
exportdb -st 09.16.2003 05:00:00 -et 09.16.2003 07:15:00 -file output.txt
-dkc 10033 -dver 020000 hr
```

Exporting data

To export data, complete the following steps:

1. Ensure that the CLUI is installed and set up as described in the CLUI installation documentation, which is located in the Tools folder on the product DVD.
2. After the CLUI is installed, enter the following command at the command prompt in the working directory:

   ```
   Exportdb st MM.DD.YYYY hh:mm:ss -et MM.DD.YYYY hh:mm:ss file myfile-
   name.txt -dkc <serial number>
   ```

where:

Exportdb	The command.
–st	The date and time to begin the export.
–et	The last date and time to include in the export.
–file	The full path to the file to which the data is to be exported.
–dkc <#>	The serial number of the specific disk controller from which you want to export data.
–dver <XXXXXX>	The version number of the output type. This is an optional switch. The current acceptable values for this switch are 010500, 010600, 016000, and 020000. The default is 010500.

Example 3. Exportdb 1

```
Exportdb -st 07.06.2001 11:00:00 et 07.06.2001 12:00:00 file 0706export.txt
-dkc 31045
```

This command retrieves the data collected between 11am and noon, and places the data in a single text file named 0706export.txt. Using this command, without the `-dver` switch, ensures that the output produced is consistent with PA Version 1.05.00.

If you want the output to be consistent with the PA Version 1.06.00 formatting, use the `-dver` switch, as shown in Example 4.

Example 4. Exportdb 2

```
Exportdb -st 07.06.2001 11:00:00 et 07.06.2001 12:00:00 file 0706export.txt
-dkc 31045 -dver 010600
```

Example 5. Exportdb 3

```
Exportdb -st 02.23.2006 16:15:00 -et 02.23.2006 17:15:00 -file export.csv
-dkc 10851 -dver 020000 rgutil -hr
```

This command generates a new file containing the RAID GROUP–specific performance data, `rgutil_filename`, along with the following files: `dkc_filename`, `ldev_filename`, `port_filename`, and `clpr_filename`.

If you specify the –dver 010600, the output is generated in three separate text files:
(dkc_filename) — DKC-specific performance data
(ldev_filename) — LDEV-specific performance data
(port_filename) — port-specific performance data

The data is exported in a comma-delimited file. The first line contains the column headers for the data that follows. All other lines contain performance data.

Example 6. Exportdb 4

```
Exportdb -st 06.01.2007 18:00:00 -et 06.02.2007 10:00:00 -dkc 10055 -file
C:\export_db_dev14\test_jnl.xls -hr -dver 020000 -jnl
```

This command retrieves the data collected between 6 PM, 1st June 2007 and 10 AM, 2nd June 2007, and places the data in a single text file named `test_jnl.xls`. The data collected is about the LDEVs that belong to all the journals in the selected array.

Importing data to MS Excel

To import the data into Excel, complete the following steps:

1. Open the exportdb file using MS Excel (`0706export.txt` as referred to in Example 3). This launches the **Text Import Wizard**.
2. In **Step 1 of 3** of the **Text Import Wizard**, select **Delimited (default)**.
3. Enter 1 in the **Start import at row** field, and select **Windows (ANSI)** in the **File origin** field.
4. Click **Next**.
5. In **Step 2 of 3** of the **Text Import Wizard**, select **Comma**, and clear any other delimiters if checked. Retain the default values for the other fields, and click **Next**.
6. In **Step 3 of 3** of the Text Import Wizard, note the highlighted column in the **Data preview** panel. To highlight all the columns in the spreadsheet, press **Shift** while navigating to the last column using the scroll bar, and then click the last column. All columns must be highlighted.
7. Click **Text** in the Column data format panel, and click **Finish**.

   The spreadsheet is populated with performance data.
8. Select the corner cell between cells A and 1. This highlights the entire spreadsheet. Go to **Format** on the menu bar, select **Column**, and then select **AutoFit Selection**. This sizes all the columns to fit the text.

The MS Excel performance data sheet is now complete.

TOP20UTIL

Syntax

```
top20util [-dkc <serial #>] [mp <mp id>] [-L] [-hr] [-ms <URL>] [-auth
<user:passwd>] [-pf <password file>] [-d<delim>] [-st <mm.dd.yyyy
hh:mm:ss>] [-et <mm.dd.yyyy hh:mm:ss>]
```

Supported disk array types

P9000 disk arrays

Description

Enables you to get a list of the top 20 resource utilization data within a given time period. It displays a list of the top 20 resources that use a particular MP blade, the associated processing type, and the corresponding MP busy time.

The MP busy time indicates the time taken by an MP blade to process the request it receives from the associated processing type.

Switches

–dkc <serial #>	**Required.** Specify the array serial number.
mp <mp id>	**Required.** Specify the MP blade ID.
-st <mm.dd.yyyy hh:mm:ss>	Constrain by a certain start time.

-et <mm.dd.yyyy hh:mm:ss>	Constrain by a certain end time.
-ms <URL>	URL of the management station.
-auth <user:passwd>	The username and password.
-pf <password file>	Can be used in place of -auth.
-d<delim>	Sets the delimiter for delimited display.
-L	Displays the column headers with delimited data.
-hr	Displays the human readable output.
-?	Prints this usage statement.

Examples

```
top20util -hr -dkc 53012 -mp 1
```

```
top20util -hr -dkc 53012 -mp 1 -st 07.19.2010 09:00:00 -et 08.02.2010
09:00:00
```

4 Support and other resources

Contacting HP

HP technical support

For world wide technical support information, see the HP support website:

http://www.hp.com/support

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Subscription service

HP recommends that you register your product at the Subscriber's choice for Business website:

http://www.hp.com/go/wwalerts

After registering, you will receive email notification of product enhancements, new driver versions, firmware updates, and other product resources.

Documentation feedback

HP welcomes your feedback. To make comments and suggestions about product documentation, you can:

Send an email to storagedocsFeedback@hp.com.

Related information

Documents

In addition to this guide, see the following documents for this product:

- *HP StorageWorks P9000 Performance Advisor Software User Guide*
- *HP StorageWorks P9000 Performance Advisor Software Install Guide*
- *HP StorageWorks P9000 Performance Advisor Software Best Practices Guide*
- *HP StorageWorks P9000 Performance Advisor Software Troubleshooting and FAQs Guide*
- *HP StorageWorks P9000 Performance Advisor Software OS Support Matrix*
- *HP StorageWorks P9000 Performance Advisor Software Release Notes*

The P9000 Performance Advisor tools related documents are:

- *P9000Watch and P9000Sketch Reference Guide*

- *P9000Info Release Notes*

To find related documents, browse to the Manuals page of the HP Business Support Center web site:

http://www.hp.com/support/manuals

For related documentation, navigate to the **Storage** section, select a storage category (**Storage Software** > **Storage Device Management Software** and product.

Websites

- HP.com
  http://www.hp.com
- HP Storage
  http://www.hp.com/go/storage
- HP Manuals
  http://www.hp.com/support/manuals
- HP download drivers and software
  http://www.hp.com/support/downloads
- HP Software Depot
  http://www.software.hp.com

Typographic conventions

Table 2 Document conventions

Convention	Element
Blue text: Table 2	Cross-reference links and email addresses
Blue, underlined text: http://www.hp.com	Website addresses
Bold text	• Keys that are pressed • Text typed into a GUI element, such as a box • GUI elements that are clicked or selected, such as menu and list items, buttons, tabs, and check boxes
Italic text	Text emphasis
`Monospace` text	• File and directory names • System output • Code • Commands, their arguments, and argument values
`Monospace, italic` text	• Code variables • Command variables
`Monospace, bold` text	Emphasized monospace text
WARNING!	An alert that calls attention to important information that if not understood or followed can result in personal injury.
CAUTION:	An alert that calls attention to important information that if not understood or followed can result in data loss, data corruption, or damage to hardware or software.
IMPORTANT:	An alert that calls attention to essential information.
NOTE:	An alert that calls attention to additional or supplementary information.
TIP:	An alert that calls attention to helpful hints and shortcuts.

A Translating LDEV from the P9000 Performance Advisor data into a cu:ldev pair

The cu:ldev mapping is obtained by dividing the LDEV value by 256. The quotient is the value of cu and the remainder is the LDEV value. The following table lists the examples of `cu:ldev` mapping:

LDEV from P9000 Performance Advisor	cu:ldev in Decimal	cu:ldev in Hexadecim-al
6	0:06	0:06
285	1:29	1:1D
289	1:33	1:21
512	2:00	2:00
515	2:03	2:03

B Array mapping

To correctly map the ACP and CHIP pairs, see the following tables for the respective array:

- Table 3
- Table 4
- Table 5
- Table 6
- Table 7
- Table 8
- Table 9

Table 3 lists ACP and CHIP pairs for disk array XP128.

NOTE:

The cards are lettered A-M, omitting I.

Table 3 XP128 (1 ACP Pair)

Slot name	Pair ID	Slot ID
B, L	ACP Pair 1	ACP B = 0; L = 4
C, G	CHIP Pair 1	CHIP C = 0; G = 4
D, J	CHIP Pair 2	CHIP D = 1; J = 5
F, K	CHIP Pair 3	CHIP F = 2; K = 6

Table 4 lists the ACP and CHIP pairs for disk array XP128.

NOTE:

The cards are lettered A-M, omitting I.

Table 4 XP128 (2 ACP Pairs)

Slot name	Pair ID	Slot ID
B, L	ACP Pair 1	ACP B = 0; L = 4
F, K	ACP Pair 2	ACP F = 1; K = 5

Slot name	Pair ID	Slot ID
C, G	CHIP Pair 1	CHIP C = 0; G = 4
D, J	CHIP Pair 2	CHIP D = 1; J = 5

Table 5 lists the ACP and CHIP pairs for XP1024.

Table 5 XP1024

Slot name	Pair ID	Slot ID
B, H	ACP Pair 1	ACP B = 0; H = 4
C, J	ACP Pair 2	ACP C = 1; J = 5
D, K	ACP Pair 3	ACP D = 2; K = 6
E, L	ACP Pair 4	ACP E = 3; L = 7
P, V	CHIP Pair 1	CHIP P = 0; V= 4
Q, W	CHIP Pair 2	CHIP Q = 1; W= 5
R, X	CHIP Pair 3	CHIP R = 2; X= 6
S, Y	CHIP Pair 4	CHIP S = 3; Y= 7

Table 6 lists the ACP and CHIP pairs for XP12000 type array.

Table 6 XP12000

Slot name	Pair ID	Slot ID
A, M	ACP Pair 1	ACP A = 0; M = 4
B, N	ACP Pair 2	ACP B = 1; N = 5
L, X	ACP Pair 3	ACP L = 2; X = 6
K, W	ACP Pair 4	ACP K = 3; W = 7
E, Q	CHIP Pair 1	CHIP E = 0; Q = 4
F, R	CHIP Pair 2	CHIP F = 1; R = 5
G, T	CHIP Pair 3	CHIP G = 2; T = 6
H, U	CHIP Pair 4	CHIP H = 3; U = 7
A, M	CHIP Pair 5	CHIP A = 8; M = 12
B, N	CHIP Pair 6	CHIP B = 9; N = 13
L, X	CHIP Pair 7	CHIP L = 10; X = 14
K, W	CHIP Pair 8	CHIP K = 11; W = 15

Table 7 lists the ACP and CHIP pairs for the XP10000 and SVS200 type arrays.

Table 7 XP10000 and SVS200

Slot name	Pair ID	Slot ID
MIX-A, MIX-F	ACP Pair 1	ACP MIX-A = 0; MIX-F = 4
MIX-A, MIX-F	CHIP Pair 1	CHIP MIX-A = 8; MIX-F = 12
B,E	CHIP Pair 2	CHIP B = 9; E = 13

Table 8 lists the ACP and CHIP pairs for an XP24000 type array.

Table 8 XP24000

Slot name	Pair ID	Slot ID
AU, MU	ACP Pair 1	ACP AU=0; MU=8
BU, NU	ACP Pair 2	ACP BU=2; NU=10
AL, ML	ACP Pair 3	ACP AL=1; ML=9
BL, NL	ACP Pair 4	ACP BL=3; NL=11
LU, XU	ACP Pair 5	ACP LU=4; XU=12
KU, WU	ACP Pair 6	ACP KU=6; WU=14
LL, XL	ACP Pair 7	ACP LL=5; XL=13
KL, WL	ACP Pair 8	ACP KL=7; WL=15
EU, QU	CHIP Pair 1	CHIP EU=0; QU=8
FU, RU	CHIP Pair 2	CHIP FU=2; RU=10
EL, QL	CHIP Pair 3	CHIP EL=1; QL=9
FL, RL	CHIP Pair 4	CHIP FL=3; RL=11
GU, TU	CHIP Pair 5	CHIP GU=4; TU=12
HU, UU	CHIP Pair 6	CHIP HU=6; UU=14
GL, TL	CHIP Pair 7	CHIP GL=5; TL=13
HL, UL	CHIP Pair 8	CHIP HL=7; ,UL=15
AU, MU	CHIP Pair 9	CHIP AU=16; MU=24
BU, NU	CHIP Pair 10	CHIP BU=18; NU=26
AL, ML	CHIP Pair 11	CHIP AL=17; ML=25
BL, NL	CHIP Pair 12	CHIP BL=19; NL=27

Slot name	Pair ID	Slot ID
LU, XU	CHIP Pair 13	CHIP LU=20; XU=28,
KU, WU	CHIP Pair 14	CHIP KU=22; WU=30
LL, XL	CHIP Pair 15	CHIP LL=21; XL=29
KL, WL	CHIP Pair 16	CHIP KL=23; WL=31

NOTE:

The numbers in the third column correspond to the card letter. These numbers are used when reading CLUI output that has an older formatting style.

Table 9 lists the ACP and CHIP pairs for an XP20000 type array.

Table 9 XP20000

Slot name	Pair ID	Slot ID
A, F	ACP Pair1	ACP A =0; F=8
B, E	ACP Pair 2	ACP B=2; E=10
G, L	CHIP Pair 1	CHIP G=0; L=8
H, K	CHIP Pair 2	CHIP H=2; K=10
A, F	CHIP Pair 3	CHIP A=16; F=24
B, E	CHIP Pair 4	CHIP B=18; E=26

C Sample outputs

This section identifies sample outputs of the most used commands.

NOTE:

Labels in labeled outputs (specified by `-hr` or `-L` in the command line) are in bold. Additionally, for commands that display different output for XP and P9000 disk arrays, the outputs are grouped based on the disk array type.

DKCS

For XP disk arrays

```
dkcs -hr -dkc 10055

 Array Type: XP 12000
 Serial #: 10055
 Record Time: 21:05:00
 Record Date: 05/12/2010
 Micro Code: 50-09-74/00
 Raid Manager Lib: 01.14.02

 Chip Data:                                   ACP Data:
 E = 0%   0%   0%   0%   0%   0%   0%   0%    A = 16% 22% 16% 22% 16% 22% 16% 22%
 F = 32% 31% 0%   0%   0%   1%   0%   0%      B = 0%   0%   0%   0%   0%   0%   0%   0%
 G = 0%   0%   0%   0%   0%   0%   0%   0%    L = 0%   0%   0%   0%   0%   0%   0%   0%
 H = 0%   0%   0%   0%   0%   0%   0%   0%    K = 0%   0%   0%   0%   0%   0%   0%   0%
 Q = 0%   0%   0%   0%   0%   0%   0%   0%    M = 16% 22% 16% 22% 16% 22% 16% 22%
 R = 0%   4%   0%   0%   1%   1%   0%   0%    N = 0%   0%   0%   0%   0%   0%   0%   0%
 T = 0%   0%   0%   0%   0%   0%   0%   0%    X = 0%   0%   0%   0%   0%   0%   0%   0%
 U = 0%   0%   0%   0%   0%   0%   0%   0%    W = 0%   0%   0%   0%   0%   0%   0%   0%
 A = 0%   0%   0%   0%   0%   0%   0%   0%
 B = 0%   0%   0%   0%   0%   0%   0%   0%
 L = 0%   0%   0%   0%   0%   0%   0%   0%
 K = 0%   0%   0%   0%   0%   0%   0%   0%
 M = 0%   0%   0%   0%   0%   0%   0%   0%
 N = 0%   0%   0%   0%   0%   0%   0%   0%
 X = 0%   0%   0%   0%   0%   0%   0%   0%
 W = 0%   0%   0%   0%   0%   0%   0%   0%


 SM Bus       = 3%        Cache Usage      = 5772 MB
 CM Bus       = 0%        Cache Size       = 16384 MB
                                      Cache Pending    = 2 MB
                                      Cache Side File = 0 MB
```

```
dkcs -L  -dkc 10055

Array Type,Serial No.,Record Time,Record Date,Micro Code,RMLib Version,
Chip E MP 0,Chip E MP 1,Chip E MP 2,Chip E MP 3,Chip E MP 4,Chip E MP 5,Chip E MP 6,
Chip E MP 7,Chip F MP 0,Chip F MP 1,Chip F MP 2,Chip F MP 3,Chip F MP 4,Chip F MP 5,
Chip F MP 6,Chip F MP 7,Chip G MP 0,Chip G MP 1,Chip G MP 2,Chip G MP 3,Chip G MP 4,
Chip G MP 5,Chip G MP 6,Chip G MP 7,Chip H MP 0,Chip H MP 1,Chip H MP 2,Chip H MP 3,
Chip H MP 4,Chip H MP 5,Chip H MP 6,Chip H MP 7,Chip Q MP 0,Chip Q MP 1,Chip Q MP 2,
Chip Q MP 3,Chip Q MP 4,Chip Q MP 5,Chip Q MP 6,Chip Q MP 7,Chip R MP 0,Chip R MP 1,
Chip R MP 2,Chip R MP 3,Chip R MP 4,Chip R MP 5,Chip R MP 6,Chip R MP 7,Chip T MP 0,
Chip T MP 1,Chip T MP 2,Chip T MP 3,Chip T MP 4,Chip T MP 5,Chip T MP 6,Chip T MP 7,
Chip U MP 0,Chip U MP 1,Chip U MP 2,Chip U MP 3,Chip U MP 4,Chip U MP 5,Chip U MP 6,
Chip U MP 7,Chip A MP 0,Chip A MP 1,Chip A MP 2,Chip A MP 3,Chip A MP 4,Chip A MP 5,
Chip A MP 6,Chip A MP 7,Chip B MP 0,Chip B MP 1,Chip B MP 2,Chip B MP 3,Chip B MP 4,
Chip B MP 5,Chip B MP 6,Chip B MP 7,Chip L MP 0,Chip LMP 1,Chip L MP 2,Chip L MP 3,
Chip L MP 4,Chip L MP 5,Chip L MP 6,Chip L MP 7,Chip K MP 0,Chip K MP 1,Chip K MP 2,
Chip K MP 3,Chip K MP 4,Chip K MP 5,Chip K MP 6,Chip K MP 7,Chip M MP 0,Chip M MP 1,
Chip M MP 2,Chip M MP 3,Chip M MP 4,Chip M MP 5,Chip M MP 6,Chip M MP 7,Chip N MP 0,
Chip N MP 1,Chip N MP 2,Chip N MP 3,Chip N MP 4,Chip N MP 5,Chip N MP 6,Chip N MP 7,
Chip X MP 0,Chip X MP 1,Chip X MP 2,Chip X MP 3,Chip X MP 4,Chip X MP 5,Chip X MP 6,
Chip X MP 7,Chip W MP 0,Chip W MP 1,Chip W MP 2,Chip W MP 3,Chip W MP 4,Chip W MP 5,
Chip W MP 6,Chip W MP 7,Acp A MP 0,Acp A MP 1,Acp A MP 2,Acp A MP 3,Acp A MP 4,
Acp A MP 5,Acp A MP 6,Acp A MP 7,Acp B MP 0,Acp B MP 1,Acp B MP 2,Acp B MP 3,
Acp B MP 4,Acp B MP 5,Acp B MP 6,Acp B MP 7,Acp L MP 0,Acp L MP 1,Acp L MP 2,
Acp L MP 3,Acp L MP 4,Acp L MP 5,Acp L MP 6,Acp L MP 7,Acp K MP 0,Acp K MP 1,
Acp K MP 2,Acp K MP 3,Acp K MP 4,Acp K MP 5,Acp K MP 6,Acp K MP 7,Acp M MP 0,
Acp M MP 1,Acp M MP 2,Acp M MP 3,Acp M MP 4,Acp M MP 5,Acp M MP 6,Acp M MP 7,
Acp N MP 0,Acp N MP 1,Acp N MP 2,Acp N MP 3,Acp N MP 4,Acp N MP 5,Acp N MP 6,
Acp N MP 7,Acp X MP 0,Acp X MP 1,Acp X MP 2,Acp X MP 3,Acp X MP 4,Acp X MP 5,
Acp X MP 6,Acp X MP 7,Acp W MP 0,Acp W MP 1,Acp W  MP 2,Acp W MP 3,Acp W MP 4,
Acp W MP 5,Acp W MP 6,Acp W MP 7,SM Bus,CM Bus,

Cache Usage (MB),Cache Size (MB),Cache Pending (MB),Cache Side File (MB)
XP 12000,10055,21:15:00,05/12/2010,50-09-74/00,01.14.02,0,0,0,0,0,0,0,0,31,80,0,0,0,1,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,2,0,0,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,23,30,23,30,20,30,23,30,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,23,30,23,30,20,30,23,30,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,3,
0,5832,16384,3,0


dkcs -dkc 10055

XP 12000,10055,21:20:00,05/12/2010,50-09-74/00,01.14.02,0,0,0,0,0,0,0,0,32,59,0,0,0,1,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,4,0,0,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,20,26,20,26,19,26,20,26,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,20,26,20,26,19,26,20,26,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,3,0,
5832,16384,2,0
```

In the `–dkcs` script output for an XP10000 array, the mix CHIPs displays utilization for only 4 MPs, even though there are 8 MPs on that board. Similarly, the MIX ACPs displays utilization for only 4 MPs.

The following are the output data samples for the `–dkcs` script for an XP10000 array:

Array Type: XP 10000
Serial #: 80029
Record Time: 17:35:00
Record Date: 07/29/2005
Micro Code: 50-03-96/00
Raid Manager Lib: 01.10.04

```
Chip Data:                                   ACP Data:
MIX-A = 16% 0%  0%  0%                        MIX-A = 0%   0%   0%   0%
B = 0%  0% 0%  0%  0% 0%  0% 0%               MIX-F = 0% 0%  0%  0%
MIX-F = 0%  0%  0%  0%
E = 0%  0% 0%  0%  0% 0%  0% 0%
SM Bus = 0%                 Cache Usage      = 39MB
CM Bus = 0%                 Cache Size       = 8192MB
                            Cache Pending    = 0MB
                            Cache Side File  = 0MB
```

In the `-dkcs` script output for an XP24000 array, the output for the headers Chip Data displays as `<CHIP Name>U` for upper, and `<CHIP Name>L` for lower. For example, CHIP E Upper displays as EU.

The ACP data displays as `<ACP Name>U` for upper and `<ACP Name>L` for lower. For example, ACP A Upper displays as AU.

The following is an example of the output data of the `-dkcs` script for an XP24000 array:

```
dkcs -hr -dkc 10001
```

Array Type: XP 24000
Serial #: 10001
Record Time: 16:30:00
Record Date: 03/30/2007
Micro Code: 60-00-20/00
Raid Manager Lib: 01.12.03

```
Chip Data:                             ACP Data:
EU = 0%    0%    0%    1%              AU = 0%    0%    0%    0%
EL = 0%    0%    0%    0%              AL = 0%    0%    0%    0%
FU = 0%    0%    0%    0%              BU = 0%    0%    0%    0%
FL = 0%    0%    0%    0%              BL = 0%    0%    0%    0%
GU = 0%    0%    0%    0%              LU = 0%    0%    0%    0%
GL = 0%    0%    0%    0%              LL = 0%    0%    0%    0%
HU = 0%    0%    0%    0%              KU = 0%    0%    0%    0%
HL = 0%    0%    0%    0%              KL = 0%    0%    0%    0%
QU = 0%    0%    0%    0%              MU = 0%    0%    0%    0%
QL = 0%    0%    0%    0%              ML = 0%    0%    0%    0%
RU = 0%    0%    0%    0%              NU = 0%    0%    0%    0%
RL = 0%    0%    0%    0%              NL = 0%    0%    0%    0%
TU = 0%    0%    0%    0%              XU = 0%    0%    0%    0%
TL = 0%    0%    0%    0%              XL = 0%    0%    0%    0%
UU = 0%    0%    0%    0%              WU = 0%    0%    0%    0%
UL = 0%    0%    0%    0%              WL = 0%    0%    0%    0%


SM Bus       = 0%        Cache Usage     = 36662 MB
CM Bus       = 0%        Cache Size      = 49152 MB
                         Cache Pending   = 6 MB
                         Cache Side File = 0 MB
```

For P9000 disk arrays

```
dkcs -hr -dkc 53012
```

```
Array Type: P9500
Serial #: 53012
Record Time: 18:00:00
Record Date: 07/09/2010
Micro Code: 70-00-31/00
Raid Manager Lib: 01.15.01

MP Blade Data:

MP Blade 0/1MA = 2%    2%    2%    2%
MP Blade 1/1MB = 2%    2%    2%    2%
MP Blade 2/2MC = 2%    2%    2%    2%
MP Blade 3/2MD = 2%    2%    2%    2%
MP Blade 4/1ME = 2%    2%    2%    2%
MP Blade 5/1MF = 2%    2%    2%    2%
MP Blade 6/2MG = 2%    2%    2%    2%
MP Blade 7/2MH = 2%    2%    2%    2%

SM Bus      = 0%        Cache Usage     = 34947 MB
CM Bus      = 0%        Cache Size      = 102400 MB
                        Cache Pending   = 0 MB
                        Cache Side File = 0 MB


dkcs -L  -dkc 53012

Array Type,Serial No.,Record Time,Record Date,Micro Code,RMLib Version,MP Blade
0/1MA MP 0,MP Blade 0/1MA MP 1,MP Blade 0/1MA MP 2,MP Blade 0/1MA MP 3,MP Blade
1/1MB MP 0,MP Blade 1/1MB MP 1,MP Blade 1/1MB MP 2,MP Blade 1/1MB MP 3,MP Blade
2/2MC MP 0,MP Blade 2/2MC MP 1,MP Blade 2/2MC MP 2,MP Blade 2/2MC MP 3,MP Blade
3/2MD MP 0,MP Blade 3/2MD MP 1,MP Blade 3/2MD MP 2,MP Blade 3/2MD MP 3,MP Blade
4/1ME MP 0,MP Blade 4/1ME MP 1,MP Blade 4/1ME MP 2,MP Blade 4/1ME MP 3,MP Blade
5/1MF MP 0,MP Blade 5/1MF MP 1,MP Blade 5/1MF MP 2,MP Blade 5/1MF MP 3,MP Blade
6/2MG MP 0,MP Blade 6/2MG MP 1,MP Blade 6/2MG MP 2,MP Blade 6/2MG MP 3,MP Blade
7/2MH MP 0,MP Blade 7/2MH MP 1,MP Blade 7/2MH MP 2,MP Blade 7/2MH MP 3,SM Bus,CM
 Bus,Cache Usage (MB),Cache Size (MB),Cache Pending (MB),Cache Side File (MB)
P9500,53012,19:45:00,07/16/2010,70-00-31/00,01.15.00,2,2,2,2,2,2,2,2,2,2,2,2,2,2
,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,0,0,34947,102400,0,0


dkcs -dkc 53012
P9500,53012,18:00:00,07/09/2010,70-00-31/00,01.15.001,1,1,2,1,1,1,1,1,2,1,3,1,1
,1,1,1,1,2,2,1,1,1,1,2,2,1,1,1,1,0,0,21453,102400,0,0
```

DKCH

For XP disk arrays

```
dkch -dkc 10055 —hr
```

Start Time: 05:30:00 01.01.1970
End Time: 05:30:00 01.01.1970
Array Type: XP 12000
Serial #: 10055
Record Time: 10:30:00
Record Date: 06/27/2006
Micro Code: 50-04-31
Raid Manager Lib: 0

Chip Data:

```
E = 0.0% 0.0% 0.0% 0.0% 0.0% 78.0% 0.0% 0.0%
F = 0.0% 66.0% 0.0% 0.0% 1.0% 0.0% 0.0% 0.0%
G = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
H = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
Q = 0.0% 0.0% 0.0% 0.0% 0.0% 90.0% 0.0% 0.0%
R = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
T = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
U = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
A = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
B = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
L = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
K = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
M = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
N = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
X = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
W = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
```

ACP Data:

```
A = 11.0% 14.0% 11.0% 8.0% 10.0% 8.0% 11.0% 2.0%
B = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
L = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
K = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
M = 11.0% 14.0% 11.0% 8.0% 11.0% 8.0% 11.0% 2.0%
N = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
X = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
W = 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
```

Control Bus: **Data Bus**:

```
High: 40.0  Low: 35.0          High: 30.0  Low: 25.0
Cache Usage: 300.0 MB          Cache Size:  4096.0 MB
Cache Pending: 50.0 MB         Cache Side File: 200.0 MB
ACP Pair BH: 64.5%             ACP Pair CJ: 52.5%
ACP Pair DK: 40.5%             ACP Pair EL: 28.5%
+++++++++++++++++++++++++++++++++++++++
```

Array Type: XP512

Serial #: 30143

Record Time: 14:04:10

Record Date: 11/28/2001

Micro Code: 01-13-18/00

Raid Manager Lib: 01.04.01

Chip Data: **ACP Data**:

```
P = 100.0%97.0% 94.0% 91.0% B = 84.0% 87.0% 90.0% 93.0%
Q = 88.0% 85.0% 82.0% 79.0% C = 72.0% 75.0% 78.0% 81.0%
R = 76.0% 73.0% 70.0% 67.0% D = 60.0% 63.0% 66.0% 69.0%
S = 64.0% 61.0% 58.0% 55.0% E = 48.0% 51.0% 54.0% 57.0%
V = 52.0% 49.0% 46.0% 43.0% H = 36.0% 39.0% 42.0% 45.0%
W = 40.0% 37.0% 34.0% 31.0% J = 24.0% 27.0% 30.0% 33.0%
X = 28.0% 25.0% 22.0% 19.0% K = 12.0% 15.0% 18.0% 21.0%
Y = 16.0% 13.0% 10.0% 7.0%  L = 0.0%  3.0%  6.0%  9.0%
```

Control Bus: **Data Bus**:

High 40.0 **Low**: 35.0 **High**: 30.0 **Low**: 25.0

Cache Usage: 300.0 MB **Cache Size**: 4096.0 MB

Cache Pending: 50.0 MB **Cache Side File**: 200.0 MB

ACP Pair BH: 64.5% **ACP Pair CJ**: 52.5%

ACP Pair DK: 40.5% **ACP Pair EL**: 28.5%

```
++++++++++++++++++++++++++++++++++++++
2 records displayed
```

```
dkch -L -dkc 30143
```

Start Time, End Time, Time, Date, Serial No., Type

```
Chip P MP1,Chip P MP 2,Chip P MP 3,Chip P MP 4,Chip Q MP 1,Chip Q MP 2,
Chip Q MP 3,Chip Q MP 4,Chip R MP 1,Chip R MP 2,Chip R MP 3,Chip R MP 4,
Chip S MP 1,Chip S MP 2,Chip S MP 3,Chip S MP 4, Chip V MP 1,Chip V MP 2,
Chip V MP 3,Chip V MP 4,Chip W MP 1,Chip W MP 2,Chip W MP 3,Chip W MP 4,
Chip X MP 1,Chip X MP 2,Chip X MP 3,Chip X MP 4,Chip Y MP 1,Chip Y MP 2,
Chip Y MP 3,Chip Y MP 4,ACP L MP 1,ACP L MP 2,ACP L MP 3,ACP L MP 4,ACP K MP 1,
ACP K MP 2,ACP K MP 3,ACP K MP 4, ACP J MP 1,ACP J MP 2,ACP J MP 3,ACP J MP 4,
ACP H MP 1,ACP H MP 2,ACP H MP 3,ACP H MP 4,ACP E MP 1,ACP E MP 2,ACP E MP 3,
ACP E MP 4,ACP D MP 1,ACP D MP 2,ACP D MP 3,ACP D MP 4,ACP C MP 1,ACP C MP 2,
ACP C MP 3,ACP C MP 4,ACP B MP 1,ACP B MP 2,ACP B MP 3,ACP B MP 4,
```

Control Bus Lo, Control Bus Hi, Data Bus Lo, Data Bus Hi, CacheUsage, CacheSize, WritePending, FileUsage, AcpPair BH, AcpPair CJ, AcpPair DK, AcpPair EL

```
160500,07172001,30143,1,100.0,97.0,94.0,91.0,88.0,85.0,82.0,79.0,76.0,73.0,70.0,67.0,64.0,6
1.0,58.0,55.0,52.0,49.0,46.0,43.0,40.0,37.0,34.0,31.0,28.0,25.0,22.0,19.0,16.0,13.0,10.0,7
.0,0.0,3.0,0.0,3.0,12.0,15.0,12.0,15.0,24.0,27.0,24.0,27.0,36.0,39.0,36.0,39.0,48.0,51.0,48
.0,51.0,60.0,63.0,60.0,63.0,72.0,75.0,72.0,75.0,84.0,87.0,84.0,87.0,40,35,30,25,300.0,4096,
50.0,200.0,3.0,27.0,51.0,75.0161000,07172001,30143,1,100.0,97.0,94.0,91.0,88.0,85.0,82.0,79
.0,76.0,73.0,70.0,67.0,64.0,61.0,58.0,55.0,52.0,49.0,46.0,43.0,40.0,37.0,34.0,31.0,28.0,25.
0,22.0,19.0,16.0,13.0,10.0,7.0,0.0,3.0,0.0,3.0,12.0,15.0,12.0,15.0,24.0,27.0,24.0,27.0,36.0
,39.0,36.0,39.0,48.0,51.0,48.0,51.0,60.0,63.0,60.0,63.0,72.0,75.0,72.0,75.0,84.0,87.0,84.0,
87.0,40,35,30,25,300.0,4096,50.0,200.0,99.0,123.0,147.0,171.0161500,07172001,30143,1,100.0,
97.0,94.0,91.0,88.0,85.0,82.0,79.0,76.0,73.0,70.0,67.0,64.0,61.0,58.0,55.0,52.0,49.0,46.0,4
3.0,40.0,37.0,34.0,31.0,28.0,25.0,22.0,19.0,16.0,13.0,10.0,7.0,0.0,3.0,0.0,3.0,12.0,15.0,12
.0,15.0,24.0,27.0,24.0,27.0,36.0,39.0,36.0,39.0,48.0,51.0,48.0,51.0,60.0,63.0,60.0,63.0,72.
0,75.0,72.0,75.0,84.0,87.0,84.0,87.0,40,35,30,25,300.0,4096,50.0,200.0,3.0,27.0,51.0,75.0
```

```
dkch -dkc 10055 —L
```

Start Time, End Time, Time, Date, Serial No., Type,

```
Chip E MP 0,Chip E MP 1,Chip E MP 2,Chip E MP 3,Chip F MP 0,Chip F MP 1,
Chip F MP 2,Chip F MP 3,Chip G MP 0,Chip G MP 1,Chip G MP 2,Chip G MP 3,
Chip H MP 0,Chip H MP 1,Chip H MP 2,Chip H MP 3,Chip Q MP 0,Chip Q MP 1,
Chip Q MP 2,Chip Q MP 3,Chip R MP 0,Chip R MP 1,Chip R MP 2,Chip R MP 3,
Chip T MP 0,Chip T MP 1,Chip T MP 2,Chip T MP 3,Chip U MP 0,Chip U MP 1,
Chip U MP 2,Chip U MP 3,Acp A MP 0,Acp A MP 1,Acp A MP 2,Acp A MP 3,
Acp B MP 0,Acp B MP 1,Acp B MP 2,Acp B MP 3,Acp L MP 0,Acp L MP 1,
Acp L MP 2,Acp L MP 3,Acp K MP 0,Acp K MP 1,Acp K MP 2,Acp K MP 3,
Acp M MP 0,Acp M MP 1,Acp M MP 2,Acp M MP 3,Acp N MP 0,Acp N MP 1,
Acp N MP 2,Acp N MP 3,Acp X MP 0,Acp X MP 1,Acp X MP 2,Acp X MP 3,
Acp W MP 0,Acp W MP 1,Acp W MP 2,Acp W MP 3,
```

SM CHIP Bus, SM ACP Bus, CM CHIP Bus, CM ACP Bus, Cache Usage, Cache Size, Cache Pending, Cache Side File, AM, BN, LX, KW

```
160000,06262006,10055,5,0.0,0.0,0.0,0.0,0.0,41.0,0.0,0.0,0.0,95.0,0.0,0.0,0.0,
1.0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,12.0,11.0,12.0,7.0,12.0,7.0,12.0,2.0,0.0,0.0,
0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,
0.0,0.0,2,3,1,5,3690.0,8192,1153.0,0.0,9.4375,0.0,0.0,0.0160500,06262006,10055,
5,0.0,0.0,0.0,0.0,0.0,23.0,0.0,0.0,0.0,95.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,
0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,88.0,0.0,
0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,
0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,
0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,
0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,
0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,12.0,12.0,12.0,7.0,12.0,7.0,12.0,2.0,0.0,0.0,
0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,
0.0,0.0,12.0,11.0,12.0,6.0,12.0,7.0,12.0,2.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,
0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,2,4,1,3,3729.0,8192,
1269.0,0.0,9.375,0.0,0.0,0.0
```

In the `—dkcs` command output for the XP24000 array, the output for the headers Chip Data displays as <CHIP Name>U for upper, and <CHIP Name>L for lower. For example, the CHIP E Upper displays as EU.

The ACP data displays as <ACP Name>U for upper and <ACP Name>L for lower. For example, ACP A Upper displays as AU.

The following is an example of the output data of the `—dkcs` command for an XP24000 array:

Start Time: 15:45:00 03.30.2007 **End Time**: 16:30:00 03.30.2007
Array Type: XP 24000
Serial #: 10001
Record Time: 15:45:00
Record Date: 03/30/2007
Micro Code: 60-00-20/00
Raid Manager Lib: 01.12.03

Chip Data: **ACP Data**:

```
EU = 0.0%   0.0%   0.0%   1.0%   AU = 0.0%   0.0%   0.0%   0.0%
EL = 0.0%   0.0%   0.0%   0.0%   AL = 0.0%   0.0%   0.0%   0.0%
FU = 0.0%   0.0%   0.0%   0.0%   BU = 0.0%   0.0%   0.0%   0.0%
FL = 0.0%   0.0%   0.0%   0.0%   BL = 0.0%   0.0%   0.0%   0.0%
GU = 0.0%   0.0%   0.0%   0.0%   LU = 0.0%   0.0%   0.0%   0.0%
GL = 0.0%   0.0%   0.0%   0.0%   LL = 0.0%   0.0%   0.0%   0.0%
HU = 0.0%   0.0%   0.0%   0.0%   KU = 0.0%   0.0%   0.0%   0.0%
HL = 0.0%   0.0%   0.0%   0.0%   KL = 0.0%   0.0%   0.0%   0.0%
QU = 0.0%   0.0%   0.0%   0.0%   MU = 0.0%   0.0%   0.0%   0.0%
QL = 0.0%   0.0%   0.0%   0.0%   ML = 0.0%   0.0%   0.0%   0.0%
RU = 0.0%   0.0%   0.0%   0.0%   NU = 0.0%   0.0%   0.0%   0.0%
RL = 0.0%   0.0%   0.0%   0.0%   NL = 0.0%   0.0%   0.0%   0.0%
TU = 0.0%   0.0%   0.0%   0.0%   XU = 0.0%   0.0%   0.0%   0.0%
TL = 0.0%   0.0%   0.0%   0.0%   XL = 0.0%   0.0%   0.0%   0.0%
UU = 0.0%   0.0%   0.0%   0.0%   WU = 0.0%   0.0%   0.0%   0.0%
UL = 0.0%   0.0%   0.0%   0.0%   WL = 0.0%   0.0%   0.0%   0.0%
```

SM CHIP Bus: 0.0% **SM ACP Bus**: 0.0%
CM CHIP Bus: 0.0% **CM ACP Bus**: 0.0%
Cache Usage: 36662.0 MB **Cache Size**: 49152.0 MB
Cache Pending: 6.0 MB **Cache Side File**: 0.0 MB
ACP Pair AUMU: 0.0% **ACP Pair ALML**: 0.0%
ACP Pair BUNU: 0.0% **ACP Pair BLNL**: 0.0%
ACP Pair LUXU: 0.0%
ACP Pair LLXL: 0.0%
ACP Pair KUWU: 0.0%
ACP Pair KLWL: 0.0%
++

For P9000 disk arrays

```
dkch -hr -dkc 53012
```

Start Time: `16:50:00 07.09.2010`
End Time: `19:45:00 09.07.2010`
Array Type: `P9500`
Serial #: `53012`
Record Time: `16:45:00`
Record Date: `09/07/2010`
Micro Code: `70-00-31/00`
Raid Manager Lib: `01.15.00`

```
MP Blade Data:

MP Blade 0/1MA = 2.0%   2.0%   2.0%   2.0%
MP Blade 1/1MB = 2.0%   2.0%   2.0%   2.0%
MP Blade 2/2MC = 2.0%   2.0%   2.0%   2.0%
MP Blade 3/2MD = 2.0%   2.0%   2.0%   2.0%
MP Blade 4/1ME = 2.0%   2.0%   2.0%   2.0%
MP Blade 5/1MF = 2.0%   2.0%   2.0%   2.0%
MP Blade 6/2MG = 2.0%   2.0%   2.0%   2.0%
MP Blade 7/2MH = 2.0%   2.0%   2.0%   2.0%

SM CHIP Bus: 0.0%             SM ACP Bus: 4.0%
CM CHIP Bus: 0.0%             CM ACP Bus: 0.0%
Cache Usage:   34947.0 MB     Cache Size:       102400.0 MB
Cache Pending:  0.0 MB        Cache Side File:  0.0 MB

+++++++++++++++++++++++++++++++++++++
```

```
dkch -L -dkc 53012

Start Time,End Time
1279287000109,1279289700109,
Time,Date,Serial No.,Type,MP Blade 0/1MA MP 0,MP Blade 0/1MA MP 1,MP Blade 0/1MA
 MP 2,MP Blade 0/1MA MP 3,MP Blade 1/1MB MP 0,MP Blade 1/1MB MP 1,MP Blade 1/1MB
 MP 2,MP Blade 1/1MB MP 3,MP Blade 2/2MC MP 0,MP Blade 2/2MC MP 1,MP Blade 2/2MC
 MP 2,MP Blade 2/2MC MP 3,MP Blade 3/2MD MP 0,MP Blade 3/2MD MP 1,MP Blade 3/2MD
 MP 2,MP Blade 3/2MD MP 3,MP Blade 4/1ME MP 0,MP Blade 4/1ME MP 1,MP Blade 4/1ME
 MP 2,MP Blade 4/1ME MP 3,MP Blade 5/1MF MP 0,MP Blade 5/1MF MP 1,MP Blade 5/1MF
 MP 2,MP Blade 5/1MF MP 3,MP Blade 6/2MG MP 0,MP Blade 6/2MG MP 1,MP Blade 6/2MG
 MP 2,MP Blade 6/2MG MP 3,MP Blade 7/2MH MP 0,MP Blade 7/2MH MP 1,MP Blade 7/2MH
 MP 2,MP Blade 7/2MH MP 3,SM CHIP Bus,SM ACP Bus,CM CHIP Bus,CM ACP Bus,Cache Us
age,Cache Size,Cache Pending,Cache Side File,AUMU,ALML,BUNU,BLNL
190000,07162010,53012,14,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0
,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0,0
,34947.0,102400,0.0,0.0,0.0,0.0,0.0,0.0,
190500,07162010,53012,14,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0
,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0,0
,34947.0,102400,0.0,0.0,0.0,0.0,0.0,0.0,
191000,07162010,53012,14,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0
,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0,0
,34947.0,102400,0.0,0.0,0.0,0.0,0.0,0.0,
```

```
dkch -dkc 53012
1279287000109,1279289700109,
190000,07162010,53012,14,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0
,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0,0,0,0
,34947.0,102400,0.0,0.0,0.0,0.0,0.0,0.0,
190500,07162010,53012,14,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0
,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0,0,0,0
,34947.0,102400,0.0,0.0,0.0,0.0,0.0,0.0,
191000,07162010,53012,14,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0
,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,2.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0,0,0,0
,34947.0,102400,0.0,0.0,0.0,0.0,0.0,0.0
```

```
dkch -dkc 53046 -ms http://testsys.cup.com:80/ -auth administrator:administrator -st
09.09.2010 09:00:00 -et 09.09.2010 09:15:00 -hr
Start Time: 09:00:00 09.09.2010  End Time: 09:15:00 09.09.2010
Array Type: P9500
Serial #: 53046
Record Time: 09:12:47
Record Date: 09/09/2010
Micro Code: 70-00-53/00
Raid Manager Lib: 01.15.01

MP Blade Data:
MPB-1MA = 12.0%  7.0%   7.0%   7.0%
MPB-1MB = 17.0%  8.0%   8.0%   8.0%
MPB-2MC = 0.0%   0.0%   0.0%   0.0%
MPB-2MD = 0.0%   0.0%   0.0%   0.0%
MPB-1ME = 0.0%   0.0%   0.0%   0.0%
MPB-1MF = 0.0%   0.0%   0.0%   0.0%
MPB-2MG = 0.0%   0.0%   0.0%   0.0%
MPB-2MH = 0.0%   0.0%   0.0%   0.0%


SM CHIP Bus: 1.0%             SM ACP Bus: 2.0%
CM CHIP Bus: 1.0%             CM ACP Bus: 2.0%
Cache Usage:    37003.0 MB    Cache Size:       38912.0 MB
Cache Pending:  25765.0 MB    Cache Side File:  0.0 MB

+++++++++++++++++++++++++++++++++++++++

Array Type: P9500
Serial #: 53046
Record Time: 09:07:47
Record Date: 09/09/2010
Micro Code: 70-00-53/00
Raid Manager Lib: 01.15.01

MP Blade Data:
MPB-1MA = 10.0%  6.0%   6.0%   6.0%
MPB-1MB = 19.0%  8.0%   8.0%   8.0%
MPB-2MC = 0.0%   0.0%   0.0%   0.0%
MPB-2MD = 0.0%   0.0%   0.0%   0.0%
MPB-1ME = 0.0%   0.0%   0.0%   0.0%
MPB-1MF = 0.0%   0.0%   0.0%   0.0%
MPB-2MG = 0.0%   0.0%   0.0%   0.0%
MPB-2MH = 0.0%   0.0%   0.0%   0.0%


SM CHIP Bus: 2.0%             SM ACP Bus: 3.0%
CM CHIP Bus: 2.0%             CM ACP Bus: 3.0%
Cache Usage:    36042.0 MB    Cache Size:       38912.0 MB
Cache Pending:  25392.0 MB    Cache Side File:  0.0 MB

+++++++++++++++++++++++++++++++++++++++

Array Type: P9500
Serial #: 53046
Record Time: 09:02:47
Record Date: 09/09/2010
Micro Code: 70-00-53/00
Raid Manager Lib: 01.15.01
```

```
MP Blade Data:
MPB-1MA = 14.0%  11.0%  9.0%   9.0%
MPB-1MB = 20.0%  8.0%   8.0%   8.0%
MPB-2MC = 0.0%   0.0%   0.0%   0.0%
MPB-2MD = 0.0%   0.0%   0.0%   0.0%
MPB-1ME = 0.0%   0.0%   0.0%   0.0%
MPB-1MF = 0.0%   0.0%   0.0%   0.0%
MPB-2MG = 0.0%   0.0%   0.0%   0.0%
MPB-2MH = 0.0%   0.0%   0.0%   0.0%


SM CHIP Bus: 2.0%             SM ACP Bus: 2.0%
CM CHIP Bus: 2.0%             CM ACP Bus: 2.0%
Cache Usage:    36302.0 MB    Cache Size:       38912.0 MB
Cache Pending:  25765.0 MB    Cache Side File:  0.0 MB

+++++++++++++++++++++++++++++++++++++++

3 records displayed.
```

LUNH

For XP disk arrays

```
lunh -ha xpslk.user.server.com -hr
```

Retrieving records 0 - 1999
Array ID: 30143 **Lun ID**: 5 **Volume-Grp.**:--
Dev. File: /dev/rdsk/c5t3d5 **LDEV ID**: 0:0 **LDEV IO/Sec**: 0
Emulation: OPEN-3-CM **SS ID**: 0004 **Raid Grp.**: 1-1
CHP Port ID: CL1B **CHP Port Util**: 0
Port Type: Escon
ACP Pair ID: 1 **ACP Pair Util**: 1

Array ID: 30143 **Lun ID**: 6 **Volume-Grp.**:--
Dev. File: /dev/rdsk/c5t3d6 **LDEV ID**: 0:2 **LDEV IO/Sec**: 0
Emulation: OPEN-3 **SS ID**: 0004 **Raid Grp.**: 1-1
CHP Port ID: CL1B **CHP Port Util**: 0
Port Type: Fibre(Target)
ACP Pair ID: 1 **ACP Pair Util**: 1

Array ID: 30143 **Lun ID**: 7 **Volume-Grp.**:
Dev. File: /dev/rdsk/c5t3d7 **LDEV ID**: 0:3 **LDEV IO/Sec**: 0
Emulation: OPEN-3 **SS ID**: 0004 **Raid Grp.**: 1-1
CHP Port ID: CL1B **CHP Port Util**: 0
Port Type: Ficon
ACP Pair ID: 1 **ACP Pair Util**: 1

Array ID: 30143 **Lun ID**: 0 **Volume-Grp**.:--
Dev. File: /dev/rdsk/c5t4d0 **LDEV ID**: 0:4 **LDEV IO/Sec**: 0
Emulation: OPEN-3 **SS ID**: 0004 **Raid Grp.**: 1-1
CHP Port ID: CL1B **CHP Port Util**: 0
Port Type: Escon
ACP Pair ID: 1 **ACP Pair Util**: 1

```
lunh -ha xpslk.user.server.com -L

Array ID, Lun ID, Volume Grp., Dev. File, LDEV ID,LDEV IO/Sec,Emulation,SS
ID, Raid Grp., CHP Port ID, CHP Port Util, Port Type, ACP Pair ID, ACP Pair Util
30143,5, ,/dev/rdsk/c5t3d5,0:0:0,0,OPEN-3-CM,0004,'1-1,CL1B,0,Fibre(Target),1,1
30143,6, ,/dev/rdsk/c5t3d6,0:0:2,0,OPEN-3,0004,'1-1,CL1B,0,Fibre(Target),1,1
30143,7, ,/dev/rdsk/c5t3d7,0:0:3,0,OPEN-3,0004,'1-1,CL1B,0,Fibre(Target),1,1
30143,0, ,/dev/rdsk/c5t4d0,0:0:4,0,OPEN-3,0004,'1-1,CL1B,0,Fibre(Target),1,1
30143,1, ,/dev/rdsk/c5t4d1,0:0:5,0,OPEN-3,0004,'1-1,CL1B,0,Ficon,1,1
30143,2, ,/dev/rdsk/c5t4d2,0:0:6,0,OPEN-3,0004,'1-1,CL1B,0,Ficon,1,1
30143,3, ,/dev/rdsk/c5t4d3,0:0:7,0,OPEN-3,0004,'1-1,CL1B,0,Ficon,1,1
30143,4, ,/dev/rdsk/c5t4d4,0:0:8,0,OPEN-3,0004,'1-1,CL1B,0,Escon,1,1
30143,5, ,/dev/rdsk/c5t4d5,0:0:9,0,OPEN-3,0004,'1-1,CL1B,0,Escon,1,1
30143,6, ,/dev/rdsk/c5t4d6,0:0:A,0,OPEN-3,0004,'1-1,CL1B,0,Escon,1,1
```

```
lunh -ha hpbs1428.user.server.com -hr -dver 010600
```

Array ID: 30143 **Array Type**: XP512
Lun ID:1 **Volume-Grp.**:-/dev/vg00 **Dev. File**: /dev/rdsk/c0t0d1
LDEV ID: 0:01 **LDEV IO/Sec**: 1437 **LDEV MB/Sec**: 3
Emulation: OPEN-3 **SS ID**: 0004 **Raid Grp.**: 1-2
CHP Port ID: CL1A **CHP Port Util**: 100
Port Type: Escon
ACP Pair ID: BH **ACP Pair Util**: 29
Cont. Access Volume: SMPL **Business Copy Volume 0**: SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2**: SMPL
Cache Fast Writes: 0 **DASD Fast Writes**: 0
Load Inhibit Count: 0 **Bypass Count**: 0
Backend Transfer Count: 75
+++++++++++++++++++++++++++++++++++++++
Array ID: 30143 **Array Type**: XP512
Lun ID:2 **Volume-Grp.**:-/dev/vg00 **Dev. File**: /dev/rdsk/c0t0d2
LDEV ID: 0:02 **LDEV IO/Sec**: 1437 **LDEV MB/Sec**: 3
Emulation: OPEN-3 **SS ID**: 0004 **Raid Grp.**: 1-3
CHP Port ID: CL1A **CHP Port Util**: 100
Port Type: Fibre(Target)
ACP Pair ID: BH **ACP Pair Util**: 29
Cont. Access Volume: SMPL **Business Copy Volume 0**: SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2**: SMPL
Cache Fast Writes: 0 **DASD Fast Writes**: 0
Load Inhibit Count: 0 **Bypass Count**: 0
Backend Transfer Count: 75
+++++++++++++++++++++++++++++++++++++++
2 records displayed.

```
lunh -ha hpbs1428.user.server.com -L -dver 010600

Array ID,Lun ID,Volume Grp.,Dev. File,LDEV ID,LDEV IO/Sec,Emulation,SS
ID,Raid Grp.,CHP Port ID,CHPPort Util,Port Type,ACP Pair ID,ACP Pair Util,Ldev
MB/s,Continuous Access,Business Copy Vol 0,Business Copy Vol 1,Business
Copy Vol 2,Cache Fast Writes,DASD Fast Writes,Load Inhibit Count,Bypass
Count,Backend Transfer,Array Type
30143,0,/dev/vg00,/dev/rdsk/c0t0d0 ,0:00,1437,OPEN-3-CM,
0004,1-1,CL1A,100,Fibre(Target),BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,75,
XP512 30143,1,/dev/vg00,/dev/rdsk/c0t0d1,0:01,1437,OPEN-3,
0004,1-2,CL1A,100,Ficon,BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,75,
XP51230143,2,/dev/vg00,/dev/rdsk/c0t0d2,0:02,1437,OPEN-3,
0004,1-3,CL1A,100,Ficon,BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,75,XP512
```

```
lunh -ha hpbs1428.user.server.com -dver 010600

30143,0,/dev/vg00, /dev/rdsk/c0t0d0,0:00,1437,OPEN-3-CM,0004,1-1,CL1A,100,Ficon,
BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,75,XP512
30143,1,/dev/vg00,/dev/rdsk/c0t0d1,0:01,1437,OPEN-3,0004,1-2,CL1A,100,Ficon,
BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,75,XP512
30143,2,/dev/vg00,/dev/rdsk/c0t0d2,0:02,1437,OPEN-3,0004,1-3,CL1A,100,Fibre(Target),
BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,75,XP512
```

```
lunh -ha hpbs1428.user.server.com -hr -dver 015100
```

Array ID: 30143 **Array Type**: XP512
Lun ID:0 **Volume-Grp.**:-/dev/vg00 **Dev. File**: /dev/rdsk/c0t0d0
LDEV ID: 0:00 **LDEV IO/Sec**: 1401 **LDEV MB/Sec**: 3
Emulation:OPEN-3 **SS ID**: 0004 **Raid Grp.**: 1-1
Host Group: UNKNOWN
CHP Port ID: CL1A **CHP Port Util**: 97
Port Type: Fibre(Target)
ACP Pair ID: BL **ACP Pair Util**: 29
Cont. Access Volume: SMPL **Business Copy Volume 0**: SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2**: SMPL
Cache Fast Writes: 0 **DASD Fast Writes**: 0
Load Inhibit Count: 0 **Bypass Count**: 0
Backend Transfer Count: 74
++++++++++++++++++++++++++++++++++++++

Array ID: 30143 **Array Type**: XP512
Lun ID:1 **Volume-Grp.**:-/dev/vg00 **Dev. File**: /dev/rdsk/c0t0d1
LDEV ID: 0:01 **LDEV IO/Sec**: 1340 **LDEV MB/Sec**: 3
Emulation: OPEN-3 **SS ID**: 0004 **Raid Grp.**: 1-2
Host Group: UNKNOWN
CHP Port ID: CL1A **CHP Port Util**: 97
Port Type: Ficon
ACP Pair ID: BL **ACP Pair Util**: 29
Cont. Access Volume: SMPL **Business Copy Volume 0**: SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2**: SMPL
Cache Fast Writes: 0 **DASD Fast Writes**: 0
Load Inhibit Count: 0 **Bypass Count**: 0
Backend Transfer Count: 71
++++++++++++++++++++++++++++++++++++++

Total IO: 2741.0 **Total MB**: 5.57 **Total Tracks**: 145.0
2 records displayed

```
lunh -ha hpbs1428.user.server.com -L -dver 015100

Array ID, Lun ID, Volume Grp., Dev. File, LDEV ID, LDEV IO/Sec, Emulation, SS ID,
Raid Grp., CHP Port ID, CHP Port Util, Port Type, ACP Pair ID, ACP Pair Util, Ldev MB/s,
Continuous Access, Business Copy Vol 0, Business Copy Vol 1, Business Copy Vol 2,
Cache Fast Writes, DASD Fast Writes, Load Inhibit Count, Bypass Count,
Backend Transfer, Array Type, Host Group
30143,0,/dev/vg00,/dev/rdsk/c0t0d0,0:00,1401,OPEN-3,0004,
1-1,CL1A,97,Fibre(Target),BL,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,74,XP512,UNKNOWN
30143,1,/dev/vg00,/dev/rdsk/c0t0d1,0:01,1340,OPEN-3,0004,
1-2,CL1A,97,Fibre(Target),BL,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,71,XP512,UNKNOWN
30143,2,/dev/vg00,/dev/rdsk/c0t0d2,0:02,1338,OPEN-3,0004,
1-3,CL1A,97,BL,Ficon,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,71,XP512,UNKNOWN
```

```
lunh -ha hpbs1428.user.server.com -dver 015100

30143,0,/dev/vg00,/dev/rdsk/c0t0d0,0:00,1401,OPEN-3,0004,1-1,
CL1A,97,Fibre(Target),BL,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,74,XP512,UNKNOWN
30143,1,/dev/vg00,/dev/rdsk/c0t0d1,0:01,1340,OPEN-3,0004,1-2,
CL1A,97,Fibre(Target),BL,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,71,XP512,UNKNOWN
=30143,2,/dev/vg00,/dev/rdsk/c0t0d2,0:02,1338,OPEN-3,0004,1-3,
CL1A,97,Escon,BL,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,71,XP512,UNKNOWN
```

The following is the header of a sample output for an XP24000 array with P9000 Thin Provisioning and Snapshot. The output displayed, under Raid Grp, for P9000 Thin Provisioning is `THP-PID<pool ID>` and the output for Snapshot is `SNAP-PID<pool ID>`.

```
lunh -ha angus -dkc 10 001 hr
```

Array ID: `10001`
Dev. File: `/dev/rdisk/disk552(/dev/rdsk/c53t2d4)`
Lun ID: `20` **Volume-Grp.**: - **LDEV ID**: `0:00`
LDEV IO/Sec: `8` **Emulation**: `OPEN-V-CVS-CM` **SSID**: `000C` **Raid Grp.**: `1-1`

CHP Port ID: `CL7B` **CHP Port Util**: `1`
Port Type: `Ficon`
ACP Pair ID: `AUMU` **ACP Pair Util**: `0`
`+++++++++++++++++++++++++++++++++++++++`

Array ID: `10001`
Dev. File: `/dev/rdisk/disk553(/dev/rdsk/c53t2d5)`
Lun ID: `21` **Volume-Grp.**: - **LDEV ID**: `0:01`
LDEV IO/Sec: `0` **Emulation**: `OPEN-V-CVS` **SSID**: `000C` **Raid Grp.**: `1-1`

CHP Port ID: `CL7B` **CHP Port Util**: `1`
Port Type: `Fibre(Target)`
ACP Pair ID: `AUMU` **ACP Pair Util**: `0`
`+++++++++++++++++++++++++++++++++++++++`

For P9000 disk arrays

```
lunh -ha alpha138.rose.hp.com -L -dkc 53012

Array ID,Lun ID,Volume Grp.,Dev. File,LDEV ID,LDEV IO/Sec,
Emulation,SSID,Raid Grp.,CHP Port ID,Port Type,ACP Pair ID,Default
MPBlade ID,Default MPBladeUtil,Current MPBlade ID,
MPBlade Util,LUSE Status
53012,0, ,/dev/rdisk/disk7(/dev/rdsk/c17t0d0),0:00,0,
OPEN-V-CVS-CM,0004,1-1,CL7B,Fibre(Target),AUMU ALML,0,0,0,0,-
53012,0, ,/dev/rdisk/disk14(/dev/rdsk/c17t0d3),0:03,0,
OPEN-V-CVS-CM,0004,1-1,CL7B,FCoE,AUMU ALML,0,0,0,0,-
53012,0, ,/dev/rdisk/disk21(/dev/rdsk/c17t0d4),0:52,0,
OPEN-V-CVS-CM,0004,1-2,CL7B,Ficon,AUMU ALML,1,0,1,0,-
```

lunh -ha alpha138.rose.hp.com -hr -dkc 53012 -dver 010600

Array ID: 53012 **Array Type**: P9500
Lun ID:0 **Volume-Grp.**:-/dev/vg00 **Dev. File**: /dev/rdisk/disk7(/dev/rdsk/c17t0d0)
LDEV ID: 0:00 **LDEV IO/Sec**: 0 **LDEV MB/Sec**: 0
Emulation: OPEN-V-CVS-CM **SS ID**: 0004 **Raid Grp.**: 1-1
CHP Port ID: CL7B
Port Type: Fibre(Target)
ACP Pair ID: AUMU ALML
Default MP BLade ID: 0 **Default MP BLade Util:** 0
Current MP BLade ID: 0 **Current MP BLade Util:** 0
Cont. Access Volume: SMPL **Business Copy Volume 0**: SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2:** SMPL
Cache Fast Writes: 0 **DASD Fast Writes:** 0
Load Inhibit Count: 0 **Bypass Count:** 0
Backend Transfer Count: 0 **Luse Status:** -
++++++++++++++++++++++++++++++++++++++
Array ID: 53012 **Array Type**: P9500
Lun ID:0 **Volume-Grp.**:-/dev/vg00 **Dev. File**: /dev/rdisk/disk14(/dev/rdsk/c17t0d3)
LDEV ID: 0:03 **LDEV IO/Sec**: 0 **LDEV MB/Sec**: 0
Emulation: OPEN-V-CVS-CM **SS ID**: 0004 **Raid Grp.**: 1-1
CHP Port ID: CL7B
Port Type: FCoE
ACP Pair ID: AUMU ALML
Default MP BLade ID: 0 **Default MP BLade Util:** 0
Current MP BLade ID: 0 **Current MP BLade Util:** 0
Cont. Access Volume: SMPL **Business Copy Volume 0**: SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2:** SMPL
Cache Fast Writes: 0 **DASD Fast Writes:** 0
Load Inhibit Count: 0 **Bypass Count:** 0
Backend Transfer Count: 0 **Luse Status:** -
++++++++++++++++++++++++++++++++++++++
Array ID: 53012 **Array Type**: P9500
Lun ID:0 **Volume-Grp.**:-/dev/vg00 **Dev. File**: /dev/rdisk/disk21(/dev/rdsk/c17t0d4)
LDEV ID: 0:52 **LDEV IO/Sec**: 0 **LDEV MB/Sec**: 0
Emulation: OPEN-V-CVS-CM **SS ID**: 0004 **Raid Grp.**: 1-2
CHP Port ID: CL7B
Port Type: Escon
ACP Pair ID: AUMU ALML
Default MP BLade ID: 1 **Default MP BLade Util:** 0
Current MP BLade ID: 1 **Current MP BLade Util:** 0
Cont. Access Volume: SMPL **Business Copy Volume 0**: SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2:** SMPL
Cache Fast Writes: 0 **DASD Fast Writes:** 0
Load Inhibit Count: 0 **Bypass Count:** 0
Backend Transfer Count: 0 **Luse Status:** -
++++++++++++++++++++++++++++++++++++++
3 records displayed.

`lunh -ha alpha138.rose.hp.com -hr -dkc 53012`

Array ID: `53012`
Dev. File: `/dev/rdisk/disk7(/dev/rdsk/c17t0d0)`
Lun ID: `0` **Volume-Grp.**: - **LDEV ID**: `0:00`
LDEV IO/Sec: `0` **Emulation**: `OPEN-V-CVS-CM` **SSID**: `0004` **Raid Grp.**: `1-1`

CHP Port ID: `CL7B`
Port Type: `FCoE`
ACP Pair ID: `AUMU`
Default MP Id:: `0` **Default MP Id:**: `0`
Default MP Id:: `0` **Default MP Id:**: `0`
++++++++++++++++++++++++++++++++++++++

Array ID: `53012`
Dev. File: `/dev/rdisk/disk14(/dev/rdsk/c17t0d3)`
Lun ID: `0` **Volume-Grp.**: - **LDEV ID**: `0:03`
LDEV IO/Sec: `0` **Emulation**: `OPEN-V-CVS-CM` **SSID**: `0004` **Raid Grp.**: `1-1`

CHP Port ID: `CL7B`
Port Type: `FCoE`
ACP Pair ID: `AUMU`
Default MP Id:: `0` **Default MP Id:**: `0`
Default MP Id:: `0` **Default MP Id:**: `0`
++++++++++++++++++++++++++++++++++++++
Array ID: `53012`
Dev. File: `/dev/rdisk/disk21(/dev/rdsk/c17t0d4)`
Lun ID: `0` **Volume-Grp.**: - **LDEV ID**: `0:52`
LDEV IO/Sec: `0` **Emulation**: `OPEN-V-CVS-CM` **SSID**: `0004` **Raid Grp.**: `1-1`

CHP Port ID: `CL7B`
Port Type: `Fibre(Target)`
ACP Pair ID: `AUMU`
Default MP Id:: `0` **Default MP Id:**: `0`
Default MP Id:: `0` **Default MP Id:**: `0`
++++++++++++++++++++++++++++++++++++++

```
lunh -ha alpha136 -dkc 53046 -ms http://alpha138.rose.hp.com:80/ -auth
administrator:administrator -mr 2 -dver 010600 -hr

Array ID: 53046  Array Type: P9500
Dev. File: \\.\PHYSICALDRIVE207
Lun ID: 4      Volume-Grp.:-
LDEV ID: 0:25                    LDEV IO/Sec: 0      LDEV MB/Sec: 0
Emulation: OPEN-V-CVS            SSID: 0004     Raid Grp.: VVol-Grp
CHP Port ID: CL2C
Port Type: Fibre(Target)
ACP Pair ID: Invalid
Default MPBlade ID: 0    Default MPBlade Util: 0
Current MPBlade ID: 0    Current MPBlade Util: 0
Cont. Access Volume: SMPL     Business Copy Volume 0: SMPL
Business Copy Volume 1: SMPL  Business Copy Volume 2: SMPL
Cache Fast Writes: 0          DASD Fast Writes: 0
Load Inhibit Count: 0         Bypass Count: 0
Backend Transfer Count: 0     Luse Status: -
+++++++++++++++++++++++++++++++++++++++

Array ID: 53046  Array Type: P9500
Dev. File: \\.\PHYSICALDRIVE208
Lun ID: 5      Volume-Grp.:-
LDEV ID: 0:26                    LDEV IO/Sec: 0      LDEV MB/Sec: 0
Emulation: OPEN-V-CVS            SSID: 0004     Raid Grp.: VVol-Grp
CHP Port ID: CL2C
Port Type: FCoE
ACP Pair ID: Invalid
Default MPBlade ID: 0    Default MPBlade Util: 0
Current MPBlade ID: 0    Current MPBlade Util: 0
Cont. Access Volume: SMPL     Business Copy Volume 0: SMPL
Business Copy Volume 1: SMPL  Business Copy Volume 2: SMPL
Cache Fast Writes: 0          DASD Fast Writes: 0
Load Inhibit Count: 0         Bypass Count: 0
Backend Transfer Count: 0     Luse Status: -
+++++++++++++++++++++++++++++++++++++++

2 records displayed.


lunh -ha alpha138.rose.hp.com -dkc 53025 -mr 2 -hr
Array ID: 53025
Dev. File: /dev/sdb
Lun ID: 3           Volume-Grp.:-            LDEV ID: 1:50
LDEV IO/Sec: 0      Emulation: OPEN-V-CVS-CM      SSID: 0005     Raid Grp.: 1-5
CHP Port ID: CL1A
Port Type: Fibre(Target)
ACP Pair ID: AUMU
Default MPBlade Id: 0    Default MPBlade Util: 0
Current MPBlade Id: 0    Current MPBlade Util: 0
Luse Status: -
+++++++++++++++++++++++++++++++++++++++

1 records displayed.
```

```
lund -dkc 10090

Unknown,-1, , ,1:1A,0,OPEN-V-CVS,0000,1-5,CL5B,1,Fibre(Target),AUMU BUNU,0,-
Unknown,-1, , ,0:5E,0,OPEN-V-CVS,0000,1-5,CL5B,1,Ficon,AUMU BUNU,0,-
Unknown,-1, , ,8:92,0,OPEN-V-CVS,0000,1-7,CL5B,1,FCoE,AUMU,0,-
Unknown,-1, , ,3:13,0,OPEN-V-CVS,0000,1-5,CL5B,1,FCoE,AUMU BUNU,0,-
Unknown,-1, , ,5:69,0,OPEN-V-CVS,0000,1-6,CL5B,1,Fibre(Target),AUMU,0,-
```

LDEV

For XP disk arrays

```
ldev -dkc 10090 -ldev 0:6D -st 04.27.2010 11:00:00 04.27.2010 16:35:00 -hr
```

Start Time: 004272010 110000 **End Time**: 04272010 163500

```
+++++++++++++++++++++++++++++++++++++++

                       Random                         Sequential
Time     Date      Reads  RHits  Writes  WHits  Reads  RHits  Writes  WHits
110000   04272010  32.0   32.0   0.0     0.0    0.0    0.0    0.0     0.0
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

113000   04272010  32.0   32.0   0.0     0.0    0.0    0.0    0.0     0.0
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

120000   04272010  32.0   32.0   0.0     0.0    0.0    0.0    0.0     0.0
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

123000   04272010  32.0   32.0   0.0     0.0    0.0    0.0    0.0     0.0
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
ldev -dkc 10090 -ldev 0:6D -st 04.27.2010 11:00:00 -et 04.27.2010 16:35:00 -hr

Start Time: 04272010 110000  End Time: 04272010 163500

++++++++++++++++++++++++++++++++++++++++++++++++++++++

                              Random                         Sequential
Time      Date       Reads    RHits    Writes   WHits   Reads  RHits  Writes  WHits
110000    04272010   32.0     32.0     0.0      0.0     0.0    0.0    0.0     0.0
+++++++++++++++++++++++++++++++++++++++++++++++++++++

113000    04272010   32.0     32.0     0.0      0.0     0.0    0.0    0.0     0.0
++++++++++++++++++++++++++++++++++++++++++++++++++++++

120000    04272010   32.0     32.0     0.0      0.0     0.0    0.0    0.0      0.0
++++++++++++++++++++++++++++++++++++++++++++++++++++++

123000    04272010   32.0     32.0     0.0      0.0     0.0    0.0    0.0      0.0
++++++++++++++++++++++++++++++++++++++++++++++++++++++

130000    04272010   32.0     32.0     0.0      0.0     0.0    0.0    0.0      0.0
++++++++++++++++++++++++++++++++++++++++++++++++++++++

133000    04272010   32.0     32.0     0.0      0.0     0.0    0.0    0.0      0.0
++++++++++++++++++++++++++++++++++++++++++++++++++++++

140000    04272010   32.0     32.0     0.0      0.0     0.0    0.0    0.0      0.0
++++++++++++++++++++++++++++++++++++++++++++++++++++++

143000    04272010   32.0     32.0     0.0      0.0     0.0    0.0    0.0      0.0
++++++++++++++++++++++++++++++++++++++++++++++++++++++

150000    04272010   32.0     32.0     0.0      0.0     0.0    0.0    0.0      0.0
++++++++++++++++++++++++++++++++++++++++++++++++++++++

153000    04272010   32.0     32.0     0.0      0.0     0.0    0.0    0.0      0.0
++++++++++++++++++++++++++++++++++++++++++++++++++++++

160000    04272010   32.0     32.0     0.0      0.0     0.0    0.0    0.0      0.0
++++++++++++++++++++++++++++++++++++++++++++++++++++++

163000    04272010   32.0     32.0     0.0      0.0     0.0    0.0    0.0      0.0
++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
ldev -dkc 82502  -ldev 1E:38

1272600600109,1272603300109
094000,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
094500,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
095000,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
095500,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
100000,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
100500,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
101000,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
101500,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
102000,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
102500,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
```

```
ldev -dkc 82502  -ldev 1E:38 -L

Start Time,End Time
1272600600109,1272603300109
Time,Date,Random Reads,Random Read Hits,Random Writes,
Random Write Hits,Sequential Reads,Sequential Read Hits,
Sequential Writes,Sequential Write Hits
094000,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
094500,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
095000,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
095500,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
100000,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
100500,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
101000,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
101500,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
102000,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
102500,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0
```

```
ldev -dkc 82502  -ldev 1E:38 -L -dver 010600

Start Time,End Time
1272601500109,1272604200109
Time,Date,Random Reads,Random Read Hits,Random Writes,
Random Write Hits,Sequential Reads,Sequential Read Hits,
Sequential Writes,Sequential Write Hits,Array ID,Ldev ID,
Rand. Read Cache Misses,Rand. Write Cache Misses,Seq. Read Cache Misses,
Seq. Write Cache Misses,Total IO,Random MB/s Reads,RandomMB/s Writes,
Sequential MB/s Reads,Sequential MB/s Writes,Backend Transfer Sequential Reads,
BackendTransfer Non-Sequential Reads,Backend Transfer Writes,CFW Reads,
CFW Read Cache Hits,CFW Writes,CFWWrite Cache Hits,DFW Count,DFW Normal Mode,
DFW Sequential Mode,Inhibit Cache Mode,Bypass Cache Mode

095500,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0,82502,
1E:38,0.0,0.0,0.0,0.0,1.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
100000,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0,82502,
1E:38,0.0,0.0,0.0,0.0,1.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
100500,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0,82502,
1E:38,0.0,0.0,0.0,0.0,1.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
101000,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0,82502,
1E:38,0.0,0.0,0.0,0.0,1.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
101500,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0,82502,
1E:38,0.0,0.0,0.0,0.0,1.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
102000,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0,82502,
1E:38,0.0,0.0,0.0,0.0,1.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
102500,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0,82502,
1E:38,0.0,0.0,0.0,0.0,1.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
103000,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0,82502,
1E:38,0.0,0.0,0.0,0.0,1.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
103500,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0,82502,
1E:38,0.0,0.0,0.0,0.0,1.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
104000,04302010,1.0,1.0,0.0,0.0,0.0,0.0,0.0,0.0,82502,
1E:38,0.0,0.0,0.0,0.0,1.0,0.0,0.0,0.0,0.0,0.0
,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
```

For P9000 disk arrays

```
ldev -hr -dkc 53036 -ldev 1:94
```

Start Time: 09172010 142500 **End Time:** 09172010 151000

```
+++++++++++++++++++++++++++++++++++++++
                                      Random                  Sequential
Time  Date  DefaultMPB  CurrentMPB  Reads RHits Writes WHits  Reads RHits
Writes  WHits
142500 09172010 MPB-2MC  MPB-2MC 0.0  0.0  1.0  1.0  0.0  0.0  0.0  0.0
+++++++++++++++++++++++++++++++++++++++
143000 09172010 MPB-2MC MPB-2MC   0.0  0.0  1.0  1.0  0.0  0.0  0.0  0.0
+++++++++++++++++++++++++++++++++++++++
143500 09172010 MPB-2MC MPB-2MC  0.0  0.0  1.0  1.0  0.0  0.0  0.0  0.0
+++++++++++++++++++++++++++++++++++++++
144000 09172010 MPB-2MC MPB-2MC  1.0  1.0  1.0  1.0  0.0  0.0  1.0  1.0
+++++++++++++++++++++++++++++++++++++++
144500 09172010 MPB-2MC MPB-2MC  0.0  0.0  1.0  1.0  0.0  0.0  1.0  1.0
+++++++++++++++++++++++++++++++++++++++
145000 09172010 MPB-2MC MPB-2MC  0.0  0.0  1.0  1.0  0.0  0.0  1.0  1.0
+++++++++++++++++++++++++++++++++++++++
145500 09172010 MPB-2MC MPB-2MC  0.0  0.0  1.0  1.0  0.0  0.0  0.0  0.0
+++++++++++++++++++++++++++++++++++++++
150000 09172010 MPB-2MC MPB-2MC  0.0  0.0  1.0  1.0  0.0  0.0  0.0  0.0
+++++++++++++++++++++++++++++++++++++++
150500 09172010 MPB-2MC MPB-2MC  4.0  3.0  1.0  1.0  1.0  1.0  1.0  1.0
+++++++++++++++++++++++++++++++++++++++
151000 09172010 MPB-2MC MPB-2MC  0.0  0.0  1.0  1.0  0.0  0.0  0.0  0.0
+++++++++++++++++++++++++++++++++++++++
10 records displayed.
```

```
ldev -dkc 53012 -ldev 0:A4 -dver 010600
```

```
1284713700105,1284716400101
142500,09172010,MPB-2MC,MPB-2MC,0.0,0.0,1.0,1.0,0.0,0.0,0.0,0.0,53036,1:94,0.0,
0.0,0.0,0.0,1.0,0.0,0.01,0.0,0.01,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
143000,09172010,MPB-2MC,MPB-2MC,0.0,0.0,1.0,1.0,0.0,0.0,0.0,0.0,53036,1:94,0.0,
0.0,0.0,0.0,1.0,0.01,0.01,0.0,0.01,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
143500,09172010,MPB-2MC,MPB-2MC,0.0,0.0,1.0,1.0,0.0,0.0,0.0,0.0,53036,1:94,0.0,
0.0,0.0,0.0,1.0,0.0,0.01,0.0,0.01,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
144000,09172010,MPB-2MC,MPB-2MC,1.0,1.0,1.0,1.0,0.0,0.0,1.0,1.0,53036,1:94,0.0,
0.0,0.0,0.0,3.0,0.01,0.02,0.0,0.01,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
144500,09172010,MPB-2MC,MPB-2MC,0.0,0.0,1.0,1.0,0.0,0.0,1.0,1.0,53036,1:94,0.0,
0.0,0.0,0.0,2.0,0.0,0.02,0.0,0.02,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
145000,09172010,MPB-2MC,MPB-2MC,0.0,0.0,1.0,1.0,0.0,0.0,1.0,1.0,53036,1:94,0.0,
0.0,0.0,0.0,2.0,0.0,0.02,0.0,0.01,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
145500,09172010,MPB-2MC,MPB-2MC,0.0,0.0,1.0,1.0,0.0,0.0,0.0,0.0,53036,1:94,0.0,
0.0,0.0,0.0,1.0,0.0,0.01,0.0,0.01,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
150000,09172010,MPB-2MC,MPB-2MC,0.0,0.0,1.0,1.0,0.0,0.0,0.0,0.0,53036,1:94,0.0,
0.0,0.0,0.0,1.0,0.0,0.02,0.0,0.01,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
150500,09172010,MPB-2MC,MPB-2MC,4.0,3.0,1.0,1.0,1.0,1.0,1.0,1.0,53036,1:94,1.0,
0.0,0.0,0.0,7.0,0.07,0.02,0.05,0.01,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
151000,09172010,MPB-2MC,MPB-2MC,0.0,0.0,1.0,1.0,0.0,0.0,0.0,0.0,53036,1:94,0.0,
0.0,0.0,0.0,1.0,0.0,0.01,0.0,0.01,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
```

```
ldev -dkc 53025 -ldev 0:85 -hr -st 09.09.2010 09:00:00 -et 09.09.2010 09:30:00
Start Time: 09092010 090000  End Time: 09092010 093000

+++++++++++++++++++++++++++++++++++++++

                                                 Random       Sequential
Time   Date     DefaultMPB CurrentMPB Reads RHits Writes WHits Reads RHits Writes
090350 09092010 MPB-2MC    MPB-2MC    0.0   1.0   0.0    1.0   0.0   1.0  0.0
+++++++++++++++++++++++++++++++++++++++

091850 09092010 MPB-2MC    MPB-2MC    0.0   1.0   0.0    1.0   0.0   1.0  0.0
+++++++++++++++++++++++++++++++++++++++

2 records displayed.


lund -dkc 53025 -mr 2 -hr
Host ID: Unknown
Dev. File:
Lun ID: -1          Volume-Grp.:-           LDEV ID: 0:84
LDEV IO/Sec: 0      Emulation: OPEN-V-CVS         SSID: 0000     Raid Grp.: 1-2
CHP Port ID: Not Mapped
Port Type: Fibre(Target)
ACP Pair ID: AUMU
Default MPBlade Id: 0    Default MPBlade Util: 0
Current MPBlade Id: 0    Current MPBlade Util: 0
Luse Status: -
+++++++++++++++++++++++++++++++++++++++

Host ID: Unknown
Dev. File:
Lun ID: -1          Volume-Grp.:-           LDEV ID: 0:85
LDEV IO/Sec: 0      Emulation: OPEN-V-CVS         SSID: 0000     Raid Grp.: 1-2
CHP Port ID: Not Mapped
Port Type: FCoE
ACP Pair ID: AUMU
Default MPBlade Id: 0    Default MPBlade Util: 0
Current MPBlade Id: 0    Current MPBlade Util: 0
Luse Status: -
+++++++++++++++++++++++++++++++++++++++

2 records displayed.
```

CONFIGALARM

```
configalarm -list -hr
```

Array ID: 53036 **Item**: 0 **Dispatch Level**: 1
Metric Category: MPBlade Processor Util
Threshold: 1
Email Destinations:
SNMP Destinations:
Send to VPO: NO **Alarm Enabled**: YES
++
Array ID: 53036 **Item**: 72 **Dispatch Level**: 1
Metric Category: Total IO
Threshold: 999999
Email Destinations:
SNMP Destinations:
Send to VPO: NO **Alarm Enabled**: NO
++

```
configalarm -list L

Active,Array,Item,Metric Category,Threshold,Dispatch Level,Email Destinations,SN
MP Destinations,VPO Destination
Y,53036,0,MPBlade Processor Util,1,1,leena.john@hp.com, ,NO
N,53036,72,Total IO,999999,1, , ,NO
N,53036,0:48,LDEV Total IO û Frontend,999999,1, , ,NO
N,53036,0:15,LDEV Total IO û Frontend,999999,1, , ,NO
N,53036,0:63,LDEV Total IO û Frontend,999999,1, , ,NO
Y,53036,-2,Total IO - Frontend,10,1,thejas.r@hp.com, ,NO
Y,53036,-2,Total IO Write- Frontend,10,1,thejas.r@hp.com, ,NO
Y,53036,-2,Total IO Read- Frontend,10,1,thejas.r@hp.com, ,NO
Y,53036,-2,Total IO Miss - Frontend,10,1,thejas.r@hp.com, ,NO
```

```
configalarm -list

Y,53036,0,MPBlade Processor Util,1,1,leena.john@hp.com, ,NO
N,53036,72,Total IO,999999,1, , ,NO
N,53036,0:48,LDEV Total IO û Frontend,999999,1, , ,NO
N,53036,0:15,LDEV Total IO û Frontend,999999,1, , ,NO
N,53036,0:63,LDEV Total IO û Frontend,999999,1, , ,NO
Y,53036,-2,Total IO - Frontend,10,1,thejas.r@hp.com, ,NO
Y,53036,-2,Total IO Write- Frontend,10,1,thejas.r@hp.com, ,NO
Y,53036,-2,Total IO Read- Frontend,10,1,thejas.r@hp.com, ,NO
Y,53036,-2,Total IO Miss - Frontend,10,1,thejas.r@hp.com, ,NO
```

The following is the sample output for the THP Pool Occupancy:

```
configalarm -dkc 10227 -mval 1 -metric THP_POOL_OCCUPANCY
```

```
configalarm —list
N,10001,THP-PID(3),THP Pool Occupancy,10,40,100,3, , ,NO

configalarm -list hr

Array ID: 10227     Item: 1          Dispatch Level: 3
Metric Category: THP POOL OCCUPANCY
Threshold: 99999
Email Destinations:
SNMP Destinations:
Send to VPO: NO
Alarm Enabled: NO
+++++++++++++++++++++++++++++++++++++++
```

The following is the sample output for the Snapshot Pool Occupancy:

```
configalarm -dkc 10227 -mval 0 -metric SNAPSHOT_POOL_OCCUPANCY
```

```
configalarm —list
N,10227,0,SNAPSHOT POOL OCCUPANCY,99999,3, , ,NO

configalarm -list hr

Array ID: 10001     Item: THP-PID(3)    Dispatch Level: 3
Metric Category: THP Pool Occupancy
Threshold : 10
Email Destinations:
SNMP Destinations:
Send to VPO: NO     Alarm Enabled: NO
+++++++++++++++++++++++++++++++++++++++
```

The following is the sample output for the Continuous Access Journal file usage:

```
configalarm -dkc 10001 -mval 0 -metric JOURNAL_FILE_USAGE_UTIL -th 10
```

```
configalarm -list
N,10001,JID-0:0,Journal File Usage Util,10,40,100,3, , ,NO

Array ID: 10001     Item: JID-0:0       Dispatch Level: 3
Metric Category: Journal File Usage Util
Threshold : 10
Email Destinations:
SNMP Destinations:
Send to VPO: NO     Alarm Enabled: NO
```

AGGREGATE

```
aggregate -items ldev_io_total:10033:CLPR2 -st
09.16.2003 06:00:00 -et 09.16.2003 07:15:00 -hr

2003-09-16 06:00:00.0: 2606.0 2003-09-16 06:00:00.0: 2606.0
2003-09-16 06:15:00.0: 1433.0 2003-09-16 06:15:00.0: 1288.0
2003-09-16 06:30:00.0: 1412.0 2003-09-16 06:30:00.0: 1433.0
2003-09-16 06:45:00.0: 1329.0 2003-09-16 06:45:00.0: 1412.0
2003-09-16 07:00:00.0: 1386.0 2003-09-16 07:00:00.0: 1386.0
```

```
aggregate -items LDEV_MB_TOTAL:10055:06:00 -hr

2008-01-10 17:45:31.0: 0.82666015625 2008-01-10 17:40:31.0: 0.8486328125
2008-01-10 17:35:31.0: 1.6025390625  2008-01-10 17:30:31.0: 1.5556640625
2008-01-10 17:25:31.0: 1.587890625   2008-01-10 17:20:31.0: 1.52490234375
2008-01-10 17:15:31.0: 1.458984375   2008-01-10 17:10:31.0: 1.57421875
2008-01-10 17:05:31.0: 1.5322265625  2008-01-10 17:00:31.0: 1.5771484375

aggregate -items LDEV_BACKEND_SEQ_READ:10055:06:00 -hr

2008-01-10 17:50:31.0: 0.0           2008-01-10 17:45:31.0: 0.0
2008-01-10 17:40:31.0: 0.0           2008-01-10 17:35:31.0: 0.0
2008-01-10 17:30:31.0: 0.0           2008-01-10 17:25:31.0: 0.0
2008-01-10 17:20:31.0: 0.0           2008-01-10 17:15:31.0: 0.0
2008-01-10 17:10:31.0: 0.0           2008-01-10 17:05:31.0: 0.0

aggregate -items port_io_max:50129:CL1E -st 09.16.2003 05:00:00 -et
09.16.2003 07:15:00 -hr

2003-09-16 05:00:00.0: 1574.0 2003-09-16 05:00:00.0: 1169.0
2003-09-16 05:15:00.0: 1406.0 2003-09-16 05:15:00.0: 1574.0
2003-09-16 05:30:00.0: 1736.0 2003-09-16 05:30:00.0: 1736.0
2003-09-16 05:45:00.0: 1271.0 2003-09-16 05:45:00.0: 1271.0
2003-09-16 06:00:00.0: 2606.0 2003-09-16 06:00:00.0: 2606.0
2003-09-16 06:15:00.0: 1433.0 2003-09-16 06:15:00.0: 1288.0
2003-09-16 06:30:00.0: 1412.0 2003-09-16 06:30:00.0: 1433.0
2003-09-16 06:45:00.0: 1329.0 2003-09-16 06:45:00.0: 1412.0
2003-09-16 07:00:00.0: 1386.0 2003-09-16 07:00:00.0: 1386.0

aggregate -items port_io_max:50129:CL1E-CL1G -st 09.16.2003 05:00:00 -et
09.16.2003 07:15:00 -hr

2003-09-16 05:00:00.0: 3238.0 2003-09-16 05:00:00.0: 3248.0
2003-09-16 05:15:00.0: 2547.0 2003-09-16 05:15:00.0: 2715.0
2003-09-16 05:30:00.0: 5130.0 2003-09-16 05:30:00.0: 5130.0
2003-09-16 05:45:00.0: 3579.0 2003-09-16 05:45:00.0: 3381.0
2003-09-16 06:00:00.0: 5062.0 2003-09-16 06:00:00.0: 5062.0
2003-09-16 06:15:00.0: 2797.0 2003-09-16 06:15:00.0: 2696.0
2003-09-16 06:30:00.0: 1784.0 2003-09-16 06:30:00.0: 1805.0
2003-09-16 06:45:00.0: 4169.0 2003-09-16 06:45:00.0: 2604.0
2003-09-16 07:00:00.0: 1574.0 2003-09-16 07:00:00.0: 4226.0
Using user-defined group Fred

aggregate -items PORT_MB_MAX:10055:CL1E -hr

2008-01-10 17:50:26.0: 32.53125      2008-01-10 17:45:26.0: 34.28515625
2008-01-10 17:40:26.0: 30.765625     2008-01-10 17:35:26.0: 25.140625
2008-01-10 17:30:26.0: 24.1015625    2008-01-10 17:25:26.0: 24.546875
2008-01-10 17:20:26.0: 24.037109375  2008-01-10 17:15:26.0: 24.53125
2008-01-10 17:10:26.0: 24.703125     2008-01-10 17:05:26.0: 23.484375
```

```
aggregate -items ACP_PAIR_IO_TOTAL:10009:AUMU -hr

2007-06-04 11:15:00.0: 418.0         2007-06-04 11:20:00.0: 414.0
2007-06-04 11:35:00.0: 458.0         2007-06-04 11:38:01.0: 0.0
2007-06-04 11:40:00.0: 493.0         2007-06-04 11:43:01.0: 0.0
2007-06-04 11:45:00.0: 564.0         2007-06-04 11:48:01.0: 0.0
2007-06-04 11:50:00.0: 399.0         2007-06-04 11:53:01.0: 0.0
2007-06-04 11:55:00.0: 610.0         2007-06-04 11:58:01.0: 0.0
2007-06-04 12:00:00.0: 678.0         2007-06-04 12:03:01.0: 0.0
2007-06-04 12:05:00.0: 615.0         2007-06-04 12:08:01.0: 0.0
2007-06-04 12:10:00.0: 531.0

aggregate -items ACP_PAIR_MB_TOTAL:10009:AUMU -hr

2007-06-04 11:20:00.0: 16.494628906252007-06-04 11:35:00.0: 19.44384765625
2007-06-04 11:38:01.0: 0.0           2007-06-04 11:40:00.0: 20.91357421875
2007-06-04 11:43:01.0: 0.0           2007-06-04 11:45:00.0: 24.14111328125
2007-06-04 11:48:01.0: 0.0           2007-06-04 11:50:00.0: 16.7470703125
2007-06-04 11:53:01.0: 0.0           2007-06-04 11:55:00.0: 26.2333984375
2007-06-04 11:58:01.0: 0.0           2007-06-04 12:00:00.0: 29.11376953125
2007-06-04 12:03:01.0: 0.0           2007-06-04 12:05:00.0: 26.65869140625
2007-06-04 12:08:01.0: 0.0           2007-06-04 12:10:00.0: 22.5966796875
2007-06-04 12:13:01.0: 0.0           2007-06-04 12:15:00.0: 26.5986328125

aggregate -items ACP_PAIR_UTIL_TOTAL:10009:AUMU -hr

2007-06-04 11:38:01.0: 1.0           2007-06-04 11:43:01.0: 1.0
2007-06-04 11:48:01.0: 1.0           2007-06-04 11:53:01.0: 1.0
2007-06-04 11:58:01.0: 2.0           2007-06-04 12:03:01.0: 1.0
2007-06-04 12:08:01.0: 1.0           2007-06-04 12:13:01.0: 1.0
2007-06-04 12:18:01.0: 1.0           2007-06-04 12:23:01.0: 1.0

aggregate -items ACP_PAIR_BE_STRACKS:10009:AUMU -hr

2007-06-04 11:40:00.0: 36.0          2007-06-04 11:43:01.0: 0.0
2007-06-04 11:45:00.0: 41.0          2007-06-04 11:48:01.0: 0.0
2007-06-04 11:50:00.0: 27.0          2007-06-04 11:53:01.0: 0.0
2007-06-04 11:55:00.0: 45.0          2007-06-04 11:58:01.0: 0.0
2007-06-04 12:00:00.0: 49.0          2007-06-04 12:03:01.0: 0.0
2007-06-04 12:05:00.0: 45.0          2007-06-04 12:08:01.0: 0.0
2007-06-04 12:10:00.0: 40.0          2007-06-04 12:13:01.0: 0.0
2007-06-04 12:15:00.0: 47.0          2007-06-04 12:18:01.0: 0.0
2007-06-04 12:20:00.0: 41.0          2007-06-04 12:23:01.0: 0.0
2007-06-04 12:25:00.0: 35.0


aggregate -items ldev_io_total:Fred
4320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4396.0

aggregate -items ldev_io_total:Fred L

2002-06-12 11:08:00.0,2002-06-12 11:09:00.0,2002-06-12 11:10:00.0,2002-06-12
11:11:00.0,2002-06-12 11:12:00.0,2002-06-12 11:13:00.0,2002-06-12
11:14:00.0,2002-06-12 11:15:00.0,2002-06-12 1:16:00.0,2002-06-12
11:16:33.04320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4396.0
```

```
aggregate -items ldev_io_total:Fred hr

2002-06-12 11:08:00.0: 4320.0        2002-06-12 11:09:00.0: 4320.0
2002-06-12 11:10:00.0: 4320.0        2002-06-12 11:11:00.0: 4320.0
2002-06-12 11:12:00.0: 4320.0        2002-06-12 11:13:00.0: 4320.0
2002-06-12 11:14:00.0: 4320.0        2002-06-12 11:15:00.0: 4320.0
2002-06-12 11:16:00.0: 4320.0        2002-06-12 11:16:33.0: 4396.0

Using normal item list

aggregate -items ldev_io_total:20031:1:f4-1:f9+1:fc
5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5114.0

aggregate -items ldev_io_total:20031:1:f4-1:f9+1:fc L

2002-06-12 11:08:00.0,2002-06-12 11:09:00.0,2002-06-12 11:10:00.0,2002-
06-12 11:11:00.0,2002-06-12 11:12:00.0,2002-06-12 11:13:00.0,2002-06-12
11:14:00.0,2002-06-12 11:15:00.0,2002-06-12 11:16:00.0,2002-06-12 11:16:33.0
5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5114.0


aggregate -items ldev_io_total:20031:1:f4-1:f9+1:fc —hr

2002-06-12 11:08:00.0: 5040.0        2002-06-12 11:09:00.0: 5040.0
2002-06-12 11:10:00.0: 5040.0        2002-06-12 11:11:00.0: 5040.0
2002-06-12 11:12:00.0: 5040.0        2002-06-12 11:13:00.0: 5040.0
2002-06-12 11:14:00.0: 5040.0        2002-06-12 11:15:00.0: 5040.0
2002-06-12 11:16:00.0: 5040.0        2002-06-12 11:16:33.0: 5114.0

aggregate -items port_io_max:50129:CL1E -st 09.16.2003 05:00:00 -ct
09.16.2003 07:15:00 -hr
2003-09-16 05:00:00.0: 1574.0        2003-09-16 05:00:00.0: 1169.0
2003-09-16 05:15:00.0: 1406.0        2003-09-16 05:15:00.0: 1574.0
2003-09-16 05:30:00.0: 1736.0        2003-09-16 05:30:00.0: 1736.0
2003-09-16 05:45:00.0: 1271.0        2003-09-16 05:45:00.0: 1271.0
2003-09-16 06:00:00.0: 2606.0        2003-09-16 06:00:00.0: 2606.0
2003-09-16 06:15:00.0: 1433.0        2003-09-16 06:15:00.0: 1288.0
2003-09-16 06:30:00.0: 1412.0        2003-09-16 06:30:00.0: 1433.0
2003-09-16 06:45:00.0: 1329.0        2003-09-16 06:45:00.0: 1412.0
2003-09-16 07:00:00.0: 1386.0        2003-09-16 07:00:00.0: 1386.0

aggregate -items port_io_max:50129:CL1E-CL1C -st 09.16.2003 05:00:00
-et 09.16.2003 07:15:00 —hr

2003-09-16 05:00:00.0: 3238.0        2003-09-16 05:00:00.0: 3248.0
2003-09-16 05:15:00.0: 2547.0        2003-09-16 05:15:00.0: 2715.0
2003-09-16 05:30:00.0: 5230.0        2003-09-16 05:30:00.0: 5130.0
2003-09-16 05:45:00.0: 3579.0        2003-09-16 05:45:00.0: 3381.0
2003-09-16 06:00:00.0: 5062.0        2003-09-16 06:00:00.0: 5062.0
2003-09-16 06:15:00.0: 2797.0        2003-09-16 06:15:00.0: 2696.0
2003-09-16 06:30:00.0: 1784.0        2003-09-16 06:30:00.0: 1805.0
2003-09-16 06:45:00.0: 4169.0        2003-09-16 06:45:00.0: 2604.0
2003-09-16 07:00:00.0: 1574.0        2003-09-16 07:00:00.0: 4226.0

aggregate -items RAIDGRP_IO_SREADS:10851:1-1 hr

2006-02-23 16:30:00.0: 2105.0        2006-02-23 16:35:00.0: 1950.0
2006-02-23 16:40:00.0: 1386.0        2006-02-23 16:45:00.0: 2387.0
2006-02-23 16:50:00.0: 2967.0        2006-02-23 16:55:00.0: 1114.0
2006-02-23 17:00:00.0: 2136.0        2006-02-23 17:05:00.0: 1642.0
2006-02-23 17:10:00.0: 1971.0        2006-02-23 17:15:00.0: 2024.0
```

```
aggregate -items RAIDGRP_MB_TOTAL:10055:1-1 -hr

2008-01-10 17:55:31.0: 16.672363281252008-01-10 17:50:31.0: 17.0283203125
2008-01-10 17:45:31.0: 17.196777343752008-01-10 17:40:31.0: 15.76220703125
2008-01-10 17:35:31.0: 4.1240234375  2008-01-10 17:30:31.0: 4.00537109375
2008-01-10 17:25:31.0: 3.9736328125  2008-01-10 17:20:31.0: 4.037109375
2008-01-10 17:15:31.0: 4.04736328125 2008-01-10 17:10:31.0: 4.05419921875

aggregate -items RAIDGRP_BE_SREADS:10009:1-1 -hr

2007-11-22  16:25:00.0:  7.0   2007-11-22  16:20:00.0:  7.0
2007-11-22  16:15:00.0:  7.0   2007-11-22  16:10:00.0:  7.0
2007-11-22  16:00:00.0:  7.0   2007-11-22  15:55:00.0:  8.0
2007-11-22  15:50:00.0:  7.0   2007-11-22  15:45:00.0:  9.0
2007-11-22  15:40:00.0:  14.0  2007-11-22  15:35:00.0:  14.0


aggregate -items SM_CHIP_FBUS_HI_UTIL:10090 -hr

2008-01-10 18:00:00.0: 1.0          2008-01-10 17:57:00.0: 1.0
2008-01-10 17:54:00.0: 1.0          2008-01-10 17:51:00.0: 1.0
2008-01-10 17:48:00.0: 1.0          2008-01-10 17:45:00.0: 1.0
2008-01-10 17:42:00.0: 1.0          2008-01-10 17:39:00.0: 1.0
2008-01-10 17:36:00.0: 0.0          2008-01-10 17:33:00.0: 1.0

aggregate -items SM_ACP_FBUS_LO_UTIL:10090 -hr

2008-01-10 18:00:00.0: 3.0          2008-01-10 17:57:00.0: 3.0
2008-01-10 17:54:00.0: 3.0          2008-01-10 17:51:00.0: 3.0
2008-01-10 17:48:00.0: 3.0          2008-01-10 17:45:00.0: 3.0
2008-01-10 17:42:00.0: 3.0          2008-01-10 17:39:00.0: 3.0
2008-01-10 17:36:00.0: 3.0          2008-01-10 17:33:00.0: 3.0

aggregate -items CM_CHIP_MBUS_HI_UTIL:10090 —hr

2008-01-10 18:00:00.0: 0.0          2008-01-10 17:57:00.0: 0.0
2008-01-10 17:54:00.0: 0.0          2008-01-10 17:51:00.0: 0.0
2008-01-10 17:48:00.0: 0.0          2008-01-10 17:45:00.0: 0.0
2008-01-10 17:42:00.0: 0.0          2008-01-10 17:39:00.0: 0.0
2008-01-10 17:36:00.0: 0.0          2008-01-10 17:33:00.0: 0.0

aggregate -items CM_ACP_MBUS_LO_UTIL:10090 —hr

2008-01-10 18:03:00.0: 20.0         2008-01-10 18:00:00.0: 19.0
2008-01-10 17:57:00.0: 19.0         2008-01-10 17:54:00.0: 19.0
2008-01-10 17:51:00.0: 19.0         2008-01-10 17:48:00.0: 19.0
2008-01-10 17:45:00.0: 19.0         2008-01-10 17:42:00.0: 19.0
2008-01-10 17:39:00.0: 19.0         2008-01-10 17:36:00.0: 19.0

P9000 Thin Provisioning sample output
aggregate -items THP_IO_SREADS:10001:1 -hr

2006-02-23 16:30:00.0: 2105.0       2006-02-23 16:35:00.0: 1950.0
2006-02-23 16:40:00.0: 1386.0       2006-02-23 16:45:00.0: 2387.0
2006-02-23 16:50:00.0: 2967.0       2006-02-23 16:55:00.0: 1114.0
2006-02-23 17:00:00.0: 2136.0       2006-02-23 17:05:00.0: 1642.0
2006-02-23 17:10:00.0: 1971.0       2006-02-23 17:15:00.0: 2024.0
```

```
Snapshot sample output
aggregate -items SNAP_IO_SREADS:10001:10 -hr

2006-02-23 16:30:00.0: 2105.0       2006-02-23 16:35:00.0: 1950.0
2006-02-23 16:40:00.0: 1386.0       2006-02-23 16:45:00.0: 2387.0
2006-02-23 16:50:00.0: 2967.0       2006-02-23 16:55:00.0: 1114.0
2006-02-23 17:00:00.0: 2136.0       2006-02-23 17:05:00.0: 1642.0
2006-02-23 17:10:00.0: 1971.0       2006-02-23 17:15:00.0: 2024.0


Overall Raid Group Utilization sample output
Utilization is expressed as a percentage with fractional precision.
For example: 100.0 is 100%

aggregate –items RAIDGRP_UTIL_OVRALL:10227:1-1 -hr
          -st 04.01.2007 00:00:00 –et 04.01.2007 00:40:00

2007-02-01 00:00:00.0: 1.0          2007-02-01 00:05:00.0: 1.0
2007-02-01 00:10:00.0: 1.0          2007-02-01 00:15:00.0: 1.0
2007-02-01 00:20:00.0: 1.0          2007-02-01 00:25:00.0: 1.07
2007-02-01 00:30:00.0: 1.0          2007-02-01 00:35:00.0: 2.0
2007-02-01 00:40:00.0: 1.0

aggregate –items RAIDGRP_UTIL_OVRALL:10227:1-1 -st 04.01.2007 00:00:00
–et 04.01.2007 01:40:00 –L

2007-02-01 00:00:00.0,2007-02-01 00:05:00.0,2007-02-01 00:10:00.0,
2007-02-01 00:15:00.0,2007-02-01 00:20:00.0,2007-02-01 00:25:00.0,
2007-02-01 00:30:00.0,2007-02-01 00:35:00.0,2007-02-01 00:40:00.01
.0,1.0,1.0,1.0,1.0,1.0,1.07,2.0,1.0

aggregate –items RAIDGRP_UTIL_OVRALL:10227:1-1 -st 04.01.2007 00:00:00
–et 04.01.2007 00:40:
001.0,1.0,1.0,1.0,1.0,1.0,1.07,2.0,1.0

aggregate -a -items RAIDGRP_UTIL_OVRALL:10130:1-1 -h 12.11.2007 10 -hr

AVERAGE: 1.02
MAXIMUM: 5.02

aggregate -a -items RAIDGRP_UTIL_OVRALL:10130:1-1 -day 12.11.2007 –hr

AVERAGE: 1.02
MAXIMUM: 5.02

aggregate -a -items RAIDGRP_UTIL_OVRALL:10130:1-1 –w 12.09.2007 –hr

AVERAGE: 11.02
MAXIMUM: 15.02

aggregate -a -items RAIDGRP_UTIL_OVRALL:10130:1-1 -m 2007 11 –hr

AVERAGE: 55.02
MAXIMUM: 250.02
```

AGGREGATE TIER:IOPS

```
aggregate -a -items TIER_IOPS:10090:1 -st 04.20.2011 10:00:00
POOL:1, TIER:1, TIER_TYPE:SSD, TIER_IOPS:5000, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 20:00:00
POOL:1, TIER:2, TIER_TYPE:SAS, TIER_IOPS:3200, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 20:00:00
POOL:1, TIER:3, TIER_TYPE:SATA, TIER_IOPS:1000, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 20:00:00

aggregate -a -items TIER_IOPS:10090:1
POOL:1, TIER:1, TIER_TYPE:SSD, TIER_IOPS:5000, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 20:00:00
POOL:1, TIER:2, TIER_TYPE:SAS, TIER_IOPS:3200, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 20:00:00
POOL:1, TIER:3, TIER_TYPE:SATA, TIER_IOPS:1000, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 20:00:00

aggregate -a -items TIER_IOPS:10090:ALL
POOL:1, TIER:1, TIER_TYPE:SSD, TIER_IOPS:5000, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 20:00:00
POOL:1, TIER:2, TIER_TYPE:SAS, TIER_IOPS:3200, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 20:00:00
POOL:1, TIER:3, TIER_TYPE:SATA, TIER_IOPS:1000, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 20:00:00
POOL:2, TIER:1, TIER_TYPE:SSD, TIER_IOPS:6000, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 18:00:00
POOL:2, TIER:2, TIER_TYPE:SAS, TIER_IOPS:4000, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 18:00:00
POOL:2, TIER:3, TIER_TYPE:SATA, TIER_IOPS:1200, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 18:00:00
POOL:3, TIER:1, TIER_TYPE:SSD, TIER_IOPS:4400, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 20:00:00
POOL:3, TIER:2, TIER_TYPE:SAS, TIER_IOPS:3200, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 20:00:00
POOL:4, TIER:1, TIER_TYPE:SSD, TIER_IOPS:5000, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 20:00:00
POOL:4, TIER:2, TIER_TYPE:SAS, TIER_IOPS:1300, START_TIME:04.20.2011 10:00:00,
END_TIME: 04.20.2011 20:00:00
```

Pool ID	Pool ID of the Smart pool for which you want to view the tier I/O per second data. The minimum and maximum values are the minimum and maximum tiers supported in the Smart pool.
TIER	Smart pool tier level. The minimum and maximum values are the minimum and maximum tiers supported in the Smart pool.
TIER_TYPE	Smart pool tier type, can be SAS, SATA, or SSD.
IOPS	Total I/Os per second on the Smart pool tier.
START_TIME	Smart pool monitoring cycle start time, displays the date and time in the mm.dd.yyyy hh:mm:ss format and corresponds to the SVP date and time stamp.
END_TIME	Smart Pool monitoring cycle end time, displays the date and time in the mm.dd.yyyy hh:mm:ss format and corresponds to the SVP date and time stamp.

PROPUTILITY

```
C:\Program Files\Hewlett-Packard\Performance Advisor\clui>proputility -i

This utility creates and maintains the wrapper.properties file.

You may hit enter to keep the current (or default) values for each entry.

Would you like to Enable IPv6? y or n. [n]:

Enter the Management Station name or IP: 15.154.70.135

Have you installed and configured Secure Socket Layer (SSL) on the
management station's web server? Enabling SSL is optional and not required
to run Performance Advisor. y or n. [n]:

Enter a username :administrator

Enter a password :

Properties file updated.
```

SNAPSHOT

```
snapshot —dkc <array sn no> -hr

PoolID Occupancy(%)
0                25
1                40
snapshot —dkc <array sn no> -L

0,25
1,40

snapshot —dkc <array sn no> -pid 1

2006-02-23 16:10:00.0: 10        2006-02-23 16:15:00.0: 25
2006-02-23 16:20:00.0: 20        2006-02-23 16:25:00.0: 25
2006-02-23 16:30:00.0: 30        2006-02-23 16:35:00.0: 25
2006-02-23 16:40:00.0: 40        2006-02-23 16:45:00.0: 40
2006-02-23 16:50:00.0: 40        2006-02-23 16:55:00.0: 50

snapshot —dkc <array sn no> -pid 1 st 02.23.2006 16:00:00 et 02.23.2006 16:15:00

2006-02-23 16:10:00.0: 10        2006-02-23 16:15:00.0: 25
```

JNL

For XP disk arrays

```
jnl -hr -dkc 10090 -jid 0

JID  MU  CTG   JNLS        AP      U(%)    Q-Marker     Q-CNT      Num      LDEV#
0    0   13   JSTAT_PJSE   1        0        371          0         1        9:FE
0    0   13   JSTAT_PJSE   1        0        371          0         1        9:FE
0    0   13   JSTAT_PJSE   1        0        371          0         1        9:FE
0    0   13   JSTAT_PJSE   1        0        371          0         1        9:FE
0    0   13   JSTAT_PJSE   1        0        371          0         1        9:FE
0    0   13   JSTAT_PJSE   1        0        371          0         1        9:FE
0    0   13   JSTAT_PJSE   1        0        371          0         1        9:FE
0    0   13   JSTAT_PJSE   1        0        371          0         1        9:FE
0    0   13   JSTAT_PJSE   1        0        371          0         1        9:FE
0    0   13   JSTAT_PJSE   1        0        371          0         1        9:FE
```

```
jnl -dkc 10090 -jid 8 -hr -resp

TIME       DATE         LDEV#    Avg Read        Max Read       Avg Write     Max Write
03:30:00   04.28.2010   0:6D     0.16275889      0.4944         NA            NA
03:30:00   04.28.2010   0:79     0.0             0.0            NA            NA
03:00:00   04.28.2010   0:6D     0.16772787      1.5072         NA            NA
03:00:00   04.28.2010   0:79     0.0             0.0            NA            NA
02:30:00   04.28.2010   0:6D     0.16235527      0.90335995     NA            NA
02:30:00   04.28.2010   0:79     0.0             0.0            NA            NA
02:00:00   04.28.2010   0:6D     0.15928955      1.07232        NA            NA
02:00:00   04.28.2010   0:79     0.0             0.0            NA            NA
01:30:00   04.28.2010   0:6D     0.16571496      2.00736        NA            NA
01:30:00   04.28.2010   0:79     0.0             0.0            NA            NA
Note : Avg Write and Max Write metrics are not supported for CA-JNL Pool Ldevs
```

```
jnl -dkc 10090 -jid 8 -hr -resp -st 04.28.2010 00:00:00 -et 04.29.2010 00:00:00

TIME       DATE         LDEV#   Avg Read        Max Read       Avg Write     Max Write
00:00:00   04.28.2010   0:6D    0.16049129      0.48863998     NA            NA
00:00:00   04.28.2010   0:79    0.0             0.0            NA       NA
00:30:00   04.28.2010   0:6D    0.16411008      1.22784        NA            NA
00:30:00   04.28.2010   0:79    0.0             0.0            NA            NA
01:00:00   04.28.2010   0:6D    0.16925243      1.6252799      NA            NA
01:00:00   04.28.2010   0:79    0.0             0.0            NA            NA
01:30:00   04.28.2010   0:6D    0.16571496      2.00736        NA            NA
01:30:00   04.28.2010   0:79    0.0             0.0            NA            NA
02:00:00   04.28.2010   0:6D    0.15928955      1.07232        NA            NA
02:00:00   04.28.2010   0:79    0.0             0.0            NA            NA
02:30:00   04.28.2010   0:6D    0.16235527      0.90335995     NA            NA
02:30:00   04.28.2010   0:79    0.0             0.0            NA            NA
03:00:00   04.28.2010   0:6D    0.16772787      1.5072         NA            NA
03:00:00   04.28.2010   0:79    0.0             0.0            NA            NA
03:30:00   04.28.2010   0:6D    0.16275889      0.4944         NA            NA
03:30:00   04.28.2010   0:79    0.0             0.0            NA            NA
Note : Avg Write and Max Write metrics are not supported for CA-JNL Pool Ldevs
```

For P9000 disk arrays

```
jnl -d; -dkc 53036 -jid 0

0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 2/2MC
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 0/1MA
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 2/2MC
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 0/1MA
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 2/2MC
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 0/1MA
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 2/2MC
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 0/1MA
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 2/2MC
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 0/1MA
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 2/2MC
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 0/1MA
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 2/2MC
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 0/1MA
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 2/2MC
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 0/1MA
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 2/2MC
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 0/1MA
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 2/2MC
0;0;0;JSTAT_PJNN;1;0;163856;0;2;0:0D;MP Blade 0/1MA


jjnl -hr -dkc 53036 -jid 0

JID  MU  CTG  JNLS       AP  U(%) Q-Marker Q-CNT Num LDEV# MPBladeId#
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 2/2MC
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 0/1MA
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 2/2MC
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 0/1MA
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 2/2MC
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 0/1MA
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 2/2MC
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 0/1MA
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 2/2MC
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 0/1MA
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 2/2MC
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 0/1MA
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 2/2MC
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 0/1MA
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 2/2MC
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 0/1MA
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 2/2MC
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 0/1MA
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 2/2MC
0    0   0    JSTAT_PJNN 1   0    163856   0     2   0:0D  MP Blade 0/1MA
```

```
jnl -L -dkc 53036 -jid 0

JID,MU,CTG,JNLS, AP, U(%), Q-Marker, Q-CNT, Num, LDEV#, MPBladeId#
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 2/2MC
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 0/1MA
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 2/2MC
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 0/1MA
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 2/2MC
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 0/1MA
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 2/2MC
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 0/1MA
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 2/2MC
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 0/1MA
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 2/2MC
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 0/1MA
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 2/2MC
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 0/1MA
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 2/2MC
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 0/1MA
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 2/2MC
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 0/1MA
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 2/2MC
0,0,0,JSTAT_PJNN,1,0,163856,0,2,0:0D,MP Blade 0/1MA
```

```
jnl -dkc 53046 -hr
JID  MU  CTG  JNLS  AP  U(%) Q-Marker Q-CNT Num  LDEV# MPBladeId#
0    0   6    JSTAT_PJNN  1         0       19742         19      1 0:00 MPB-1MA
1    0   7    JSTAT_SJNN  1         0       21310         6       1 0:01 MPB-2MC
2    0   8    JSTAT_PJNN  1         0       19402         11      2 0:09 MPB-1MA
2    0   8    JSTAT_PJNN  1         0       19402         11      2 0:09 MPB-1ME
3    0   10   JSTAT_SJNN  1         0       21385         0       2 0:11 MPB-1ME
3    0   10   JSTAT_SJNN  1         0       21385         0       2 0:11 MPB-2MC
8    0   0    JSTAT_SMPL  0         0       0             0       2 0:16 MPB-1MA
8    0   0    JSTAT_SMPL  0         0       0             0       2 0:16 MPB-2MG
9    0   0    JSTAT_SMPL  0         0       0             0       2 0:17 MPB-2MG
9    0   0    JSTAT_SMPL  0         0       0             0       2 0:17 MPB-2MC
10   0   11   JSTAT_SJNN  1         0       8196          0       1 0:F1 MPB-1MA
11   0   0    JSTAT_SMPL  0         0       0             0       1 0:02 MPB-2MC
```

```
jnl -dkc 53046 -jid 1 -hr
JID  MU  CTG  JNLS        AP U(%)  Q-Marker Q-CNT Num LDEV# MPBladeId#
1    0   7    JSTAT_SJNN  1  0    21310    6       1  0:01 MPB-2MC
1    0   7    JSTAT_SJNN  1  0    20192    15      1  0:01 MPB-2MC
1    0   7    JSTAT_SJNN  1  0    19122    0       1  0:01 MPB-2MC
1    0   7    JSTAT_SJNN  1  0    17992    10      1  0:01 MPB-2MC
1    0   7    JSTAT_SJNN  1  0    16856    7       1  0:01 MPB-2MC
1    0   7    JSTAT_SJNN  1  0    15708    13      1  0:01 MPB-2MC
1    0   7    JSTAT_SJNN  1  0    14609    9       1  0:01 MPB-2MC
1    0   7    JSTAT_SJNN  1  0    13524    2       1  0:01 MPB-2MC
1    0   7    JSTAT_SJNN  1  0    12408    13      1  0:01 MPB-2MC
1    0   7    JSTAT_SJNN  1  0    11314    5       1  0:01 MPB-2MC
```

```
jnl -dkc 53046 -jid 1 -hr -resp
TIME      DATE       LDEV# MPBladeId# Avg Read Max Read Avg Write Max Write
11:22:05 09.09.2010   0:01 MPB-2MC         0.0      0.0   NA         NA
10:52:05 09.09.2010   0:01 MPB-2MC         0.0      0.0   NA         NA
10:22:05 09.09.2010   0:01 MPB-2MC         0.0      0.0   NA         NA
09:52:05 09.09.2010   0:01 MPB-2MC         0.0      0.0   NA         NA
09:22:05 09.09.2010   0:01 MPB-2MC         0.0      0.0   NA         NA
08:52:05 09.09.2010   0:01 MPB-2MC         0.0      0.0   NA         NA
08:22:05 09.09.2010   0:01 MPB-2MC         0.0      0.0   NA         NA
07:52:05 09.09.2010   0:01 MPB-2MC         0.0      0.0   NA         NA
07:22:05 09.09.2010   0:01 MPB-2MC         0.0      0.0   NA         NA
06:52:05 09.09.2010   0:01 MPB-2MC         0.0      0.0   NA         NA
Note : Avg Write and Max Write metrics are not supported for CA-JNL Pool Ldevs

jnl -dkc 53046 -jid 1 -resp -L
TIME ,DATE ,LDEV# ,MPBladeId# ,Avg Read ,Max Read ,Avg Write ,Max Write
112205,09092010,0:01,MPB-2MC,0.0,0.0,NA,NA
105205,09092010,0:01,MPB-2MC,0.0,0.0,NA,NA
102205,09092010,0:01,MPB-2MC,0.0,0.0,NA,NA
095205,09092010,0:01,MPB-2MC,0.0,0.0,NA,NA
092205,09092010,0:01,MPB-2MC,0.0,0.0,NA,NA
085205,09092010,0:01,MPB-2MC,0.0,0.0,NA,NA
082205,09092010,0:01,MPB-2MC,0.0,0.0,NA,NA
075205,09092010,0:01,MPB-2MC,0.0,0.0,NA,NA
072205,09092010,0:01,MPB-2MC,0.0,0.0,NA,NA
065205,09092010,0:01,MPB-2MC,0.0,0.0,NA,NA
Note : Avg Write and Max Write metrics are not supported for CA-JNL Pool Ldevs
```

EXPORTDB

```
exportdb -st 09.16.2003 05:00:00 -et 09.16.2003 07:15:00 -file output.txt
-dkc 10033 -dver 020000 hr
```

The following is the portion of data in output file `ldev_output.txt`, which contains the Ext-LUN configuration data and cache partitioning information. The information is appended to the end of each record. The E-Port list can have one or more port names because of the dual paths configuration. If the `–hr` option is not used, the E-Port list, E-DEV, and LDEV ID are in integer format.

where:

E-Port list	The Ext-Lun Initiator port(s) that is connected to the external array.
E-Seq	The external array serial number.
E-LDEV	The LDEV ID at the external array.
CLPR	The Cache Partitioning ID.

```
Sample usage and output:
...,E-Port list, E-Seq, E-LDEV, CLPR
..., -1, -1, -1, -1
..., CL1C, 20074, 0:90, CLPR0
..., CL1C, 20074, 0:91, CLPR0
..., CL1C, 20074, 0:92, CLPR1
..., CL1C, 20074, 0:93, CLPR1
..., CL1B CL1C, 20074, 0:94, CLPR2
..., -1, -1, -1, CLPR3

+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
The following is the portion of data in the output file ldev_output.txt,
which contains the port attribute and external array serial number. The
information is appended to the end of each record. The E-Seq list could
have one or more array serial numbers because one Ext-Lun Initiator can
connect to multiple arrays in a SAM. If the -hr option is not used, the
Port ID is in integer format.
..., Port Type, E-Seq list
..., Fibre (Ext-Lun Initiator), 10099 20099
..., Fibre (Ext-Lun Initiator), 10099 20099
..., Fibre (Ext-Lun Initiator), 10088
..., Fibre (Normal), -1
..., Fibre (CV Initiator), -1
..., Fibre, -1
..., -, -1
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
The following is the portion of data in the output file ldev_output.txt,
which contains the CLPR configuration data and metrics. All units for
Cache size are in MB. If the -hr option is not used, the CLPR is in integer
format.

Disk Array Serial Number, CLPR, Date, Cache Size (MB), Write Pending (MB),
Sidefile Usage (MB), Read Hits
10033, CLPR0, 2003-05-19 13:01:00.103, 8000, 96, 23, 8778
10033, CLPR1, 2003-05-19 13:01:00.103, 64000, 76, 23, 870
10033, CLPR2, 2003-05-19 13:01:00.103, 8000, 67, 23, 86
10033, CLPR3, 2003-05-19 13:01:00.103, 16000, 45, 12, 778
10033, CLPR4, 2003-05-19 13:01:00.103, 8000, 0, 0, 0
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

The following is the portion of data in the output file mp_output.txt,
which contains the MP blade and processors utilization data and metrics. All units for
the MP blade and processor utilization are in percentage (measured on a scale of 1 - 100%).

DKC Serial Number MP Blade ID  MP 0 Utilization MP 1 Utilization MP 2 Utilization
MP 3 Utilization Average Utilization Time Open-target Busy Time System Busy Time

53036 MPB-1MA 0   (25.0%)  1   (25.0%)  2   (25.0%) 3   (25.0%) 4   15:00.1 0 3
53036 MPB-1MB 4   (56.521%)  5   (14.492%) 6   (14.49%) 7   (14.43%) 17.25 15:00.1
53036 MPB-2MC 8   (0.0%)   9   (0.0%)   10  (0.0%)  11   (0.0%)  0     15:00.1
53036 MPB-2MD 12   (0.0%)   13   (0.0%)   14  (0.0%)  15   (0.0%)  0   15:00.1
53036 MPB-1ME 16   (0.0%)   17   (0.0%)   18  (0.0%)  19  (0.0%)  0   15:00.1
53036 MPB-1MF 20   (0.0%)   21   (0.0%)   22  (0.0%)  23   (0.0%)  0   15:00.1
53036 MPB-2MG 24   (0.0%)   25   (0.0%)   26  (0.0%)  27   (0.0%)  0   15:00.1
53036 MPB-2MH 28   (0.0%)   29   (0.0%)   30  (0.0%)  31   (0.0%)  0   15:00.1
53036 MPB-1MA 0   (25.0%)  1   (25.0%)  2   (25.0%) 3   (25.0%) 4   30:00.1 0 3
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
exportdb -dkc 10055 -st 09.14.2006 12:00:00 -et 09.14.2006 13:00:00 -dver 020000
-file test.csv -resp all

Data records exported: 12
Data record export complete.

-resp write  Max Write Response Time(msec)-valid for last 30 secs
-resp read  Max Read Response Time(msec)-valid for last 30 secs
-resp all  Max Write Response Time(msec)-valid for last 30 secs and
Max Read Response Time(msec)-valid for last 30 secs
```

The following is the portion of data in the output file ldev_xxx.txt (where xxx is the name provided along with the command), for the option -resp all, which contains the Max Write Response Time(msec)-valid for last 30 secs and Max Read Response Time(msec)-valid for last 30 secs.

```
..., Avg Read Response Time(msec) Max Read Response Time(msec)-valid for last
30 secs Avg Write Response Time(msec) Max Write Response Time(msec)-valid for
last 30 secs
..., 0.3195021 0.22292021 0.37504572 0.60767996
..., 5.0686855 3.4459646  0.35136  0.53568
..., 0.839887 0.28704  0.35788235 0.4224
..., 0.301793 0.42624  0.37919998 0.52608
```

The following is the sample output for the exportdb command on an XP24000 array.

```
Time Stamp,DKC Serial Number,JID,MU,CTG,JNLS,AP,U(%),Q-Marker,Q-CNT,Num,LDEV#
2007-04-05 01:02:00.093,10001,0,0,0,3,1,0,109095574,0,3,1287
2007-04-05 01:02:00.093,10001,0,0,0,3,1,0,109095574,0,3,1288
2007-04-05 01:02:00.093,10001,0,0,0,3,1,0,109095574,0,3,1289
2007-04-05 01:02:00.093,10001,0,1,0,3,0,0,0,0,3,1287
2007-04-05 01:02:00.093,10001,0,1,0,3,0,0,0,0,3,1288
2007-04-05 01:02:00.093,10001,0,1,0,3,0,0,0,0,3,1289
2007-04-05 01:02:00.093,10001,0,2,0,3,0,0,0,0,3,1287
2007-04-05 01:02:00.093,10001,0,2,0,3,0,0,0,0,3,1288
2007-04-05 01:02:00.093,10001,0,2,0,3,0,0,0,0,3,1289
2007-04-05 01:02:00.093,10001,0,3,0,3,0,0,0,0,3,1287
2007-04-05 01:02:00.093,10001,0,3,0,3,0,0,0,0,3,1288
2007-04-05 01:02:00.093,10001,0,3,0,3,0,0,0,0,3,1289

2007-04-05 01:06:00.109,10001,0,0,0,3,1,0,109095574,0,3,1287
2007-04-05 01:06:00.109,10001,0,0,0,3,1,0,109095574,0,3,1288
2007-04-05 01:06:00.109,10001,0,0,0,3,1,0,109095574,0,3,1289
2007-04-05 01:06:00.109,10001,0,1,0,3,0,0,0,0,3,1287
2007-04-05 01:06:00.109,10001,0,1,0,3,0,0,0,0,3,1288
2007-04-05 01:06:00.109,10001,0,1,0,3,0,0,0,0,3,1289
2007-04-05 01:06:00.109,10001,0,2,0,3,0,0,0,0,3,1287
2007-04-05 01:06:00.109,10001,0,2,0,3,0,0,0,0,3,1288
2007-04-05 01:06:00.109,10001,0,2,0,3,0,0,0,0,3,1289
2007-04-05 01:06:00.109,10001,0,3,0,3,0,0,0,0,3,1287
2007-04-05 01:06:00.109,10001,0,3,0,3,0,0,0,0,3,1288
2007-04-05 01:06:00.109,10001,0,3,0,3,0,0,0,0,3,1289
```

```
2007-04-05 01:10:00.109,10001,0,0,0,3,1,0,109095574,0,3,1287
2007-04-05 01:10:00.109,10001,0,0,0,3,1,0,109095574,0,3,1288
2007-04-05 01:10:00.109,10001,0,0,0,3,1,0,109095574,0,3,1289
2007-04-05 01:10:00.109,10001,0,1,0,3,0,0,0,0,3,1287
2007-04-05 01:10:00.109,10001,0,1,0,3,0,0,0,0,3,1288
2007-04-05 01:10:00.109,10001,0,1,0,3,0,0,0,0,3,1289
2007-04-05 01:10:00.109,10001,0,2,0,3,0,0,0,0,3,1287
2007-04-05 01:10:00.109,10001,0,2,0,3,0,0,0,0,3,1288
2007-04-05 01:10:00.109,10001,0,2,0,3,0,0,0,0,3,1289
2007-04-05 01:10:00.109,10001,0,3,0,3,0,0,0,0,3,1287
2007-04-05 01:10:00.109,10001,0,3,0,3,0,0,0,0,3,1288
2007-04-05 01:10:00.109,10001,0,3,0,3,0,0,0,0,3,1289

2007-04-05 01:14:00.109,10001,0,0,0,3,1,0,109095574,0,3,1287
2007-04-05 01:14:00.109,10001,0,0,0,3,1,0,109095574,0,3,1288
2007-04-05 01:14:00.109,10001,0,0,0,3,1,0,109095574,0,3,1289
2007-04-05 01:14:00.109,10001,0,1,0,3,0,0,0,0,3,1287
2007-04-05 01:14:00.109,10001,0,1,0,3,0,0,0,0,3,1288
2007-04-05 01:14:00.109,10001,0,1,0,3,0,0,0,0,3,1289
2007-04-05 01:14:00.109,10001,0,2,0,3,0,0,0,0,3,1287
2007-04-05 01:14:00.109,10001,0,2,0,3,0,0,0,0,3,1288
2007-04-05 01:14:00.109,10001,0,2,0,3,0,0,0,0,3,1289
2007-04-05 01:14:00.109,10001,0,3,0,3,0,0,0,0,3,1287
2007-04-05 01:14:00.109,10001,0,3,0,3,0,0,0,0,3,1288
2007-04-05 01:14:00.109,10001,0,3,0,3,0,0,0,0,3,1289

2007-04-05 01:18:00.109,10001,0,0,0,3,1,0,109095574,0,3,1287
2007-04-05 01:18:00.109,10001,0,0,0,3,1,0,109095574,0,3,1288
2007-04-05 01:18:00.109,10001,0,0,0,3,1,0,109095574,0,3,1289
2007-04-05 01:18:00.109,10001,0,1,0,3,0,0,0,0,3,1287
2007-04-05 01:18:00.109,10001,0,1,0,3,0,0,0,0,3,1288
2007-04-05 01:18:00.109,10001,0,1,0,3,0,0,0,0,3,1289
2007-04-05 01:18:00.109,10001,0,2,0,3,0,0,0,0,3,1287
2007-04-05 01:18:00.109,10001,0,2,0,3,0,0,0,0,3,1288
2007-04-05 01:18:00.109,10001,0,2,0,3,0,0,0,0,3,1289
2007-04-05 01:18:00.109,10001,0,3,0,3,0,0,0,0,3,1287
2007-04-05 01:18:00.109,10001,0,3,0,3,0,0,0,0,3,1288
2007-04-05 01:18:00.109,10001,0,3,0,3,0,0,0,0,3,1289


2007-04-05 01:22:00.109,10001,0,0,0,3,1,0,109095574,0,3,1287
2007-04-05 01:22:00.109,10001,0,0,0,3,1,0,109095574,0,3,1288
2007-04-05 01:22:00.109,10001,0,0,0,3,1,0,109095574,0,3,1289
2007-04-05 01:22:00.109,10001,0,1,0,3,0,0,0,0,3,1287
2007-04-05 01:22:00.109,10001,0,1,0,3,0,0,0,0,3,1288
2007-04-05 01:22:00.109,10001,0,1,0,3,0,0,0,0,3,1289
2007-04-05 01:22:00.109,10001,0,2,0,3,0,0,0,0,3,1287
2007-04-05 01:22:00.109,10001,0,2,0,3,0,0,0,0,3,1288
2007-04-05 01:22:00.109,10001,0,2,0,3,0,0,0,0,3,1289
2007-04-05 01:22:00.109,10001,0,3,0,3,0,0,0,0,3,1287
2007-04-05 01:22:00.109,10001,0,3,0,3,0,0,0,0,3,1288
2007-04-05 01:22:00.109,10001,0,3,0,3,0,0,0,0,3,1289
```

```
2007-04-05 01:26:00.109,10001,0,0,0,3,1,0,109095574,0,3,1287
2007-04-05 01:26:00.109,10001,0,0,0,3,1,0,109095574,0,3,1288
2007-04-05 01:26:00.109,10001,0,0,0,3,1,0,109095574,0,3,1289
2007-04-05 01:26:00.109,10001,0,1,0,3,0,0,0,0,3,1287
2007-04-05 01:26:00.109,10001,0,1,0,3,0,0,0,0,3,1288
2007-04-05 01:26:00.109,10001,0,1,0,3,0,0,0,0,3,1289
2007-04-05 01:26:00.109,10001,0,2,0,3,0,0,0,0,3,1287
2007-04-05 01:26:00.109,10001,0,2,0,3,0,0,0,0,3,1288
2007-04-05 01:26:00.109,10001,0,2,0,3,0,0,0,0,3,1289
2007-04-05 01:26:00.109,10001,0,3,0,3,0,0,0,0,3,1287
2007-04-05 01:26:00.109,10001,0,3,0,3,0,0,0,0,3,1288
2007-04-05 01:26:00.109,10001,0,3,0,3,0,0,0,0,3,1289

2007-04-05 01:30:00.109,10001,0,0,0,3,1,0,109095574,0,3,1287
2007-04-05 01:30:00.109,10001,0,0,0,3,1,0,109095574,0,3,1288
2007-04-05 01:30:00.109,10001,0,0,0,3,1,0,109095574,0,3,1289
2007-04-05 01:30:00.109,10001,0,1,0,3,0,0,0,0,3,1287
2007-04-05 01:30:00.109,10001,0,1,0,3,0,0,0,0,3,1288
2007-04-05 01:30:00.109,10001,0,1,0,3,0,0,0,0,3,1289
2007-04-05 01:30:00.109,10001,0,2,0,3,0,0,0,0,3,1287
2007-04-05 01:30:00.109,10001,0,2,0,3,0,0,0,0,3,1288
2007-04-05 01:30:00.109,10001,0,2,0,3,0,0,0,0,3,1289
2007-04-05 01:30:00.109,10001,0,3,0,3,0,0,0,0,3,1287
2007-04-05 01:30:00.109,10001,0,3,0,3,0,0,0,0,3,1288
2007-04-05 01:30:00.109,10001,0,3,0,3,0,0,0,0,3,1289

2007-04-05 01:34:00.109,10001,0,0,0,3,1,0,109095574,0,3,1287
2007-04-05 01:34:00.109,10001,0,0,0,3,1,0,109095574,0,3,1288
2007-04-05 01:34:00.109,10001,0,0,0,3,1,0,109095574,0,3,1289
2007-04-05 01:34:00.109,10001,0,1,0,3,0,0,0,0,3,1287
2007-04-05 01:34:00.109,10001,0,1,0,3,0,0,0,0,3,1288
2007-04-05 01:34:00.109,10001,0,1,0,3,0,0,0,0,3,1289
2007-04-05 01:34:00.109,10001,0,2,0,3,0,0,0,0,3,1287
2007-04-05 01:34:00.109,10001,0,2,0,3,0,0,0,0,3,1288
2007-04-05 01:34:00.109,10001,0,2,0,3,0,0,0,0,3,1289
2007-04-05 01:34:00.109,10001,0,3,0,3,0,0,0,0,3,1287
2007-04-05 01:34:00.109,10001,0,3,0,3,0,0,0,0,3,1288
2007-04-05 01:34:00.109,10001,0,3,0,3,0,0,0,0,3,1289
```

The following is the sample output for the exportdb command on an XP24000 array for Ports.

```
exportdb -hr -dkc 10090 -st 03.25.2011 00:00:00 -et 03.29.2011 11:08:00
-file a.xls -dver 020000

Disk Array Serial Number,Port ID,Date,Min IO/s,Max IO/s,Ave IO/s,Min MBs/s,
Max MBs/s,Ave MBs/s,Port Type,E-Seq list
10090,CL1A[Fibre(Target)],2011-03-29 11:00:00.111,0.0,0.0,0.0,0.0,0.0,0.0,
Fibre(Target),-1
10090,CL1A[Fibre(Target)],2011-03-29 11:00:00.111,0.0,0.0,0.0,0.0,0.0,0.0,
Fibre(Target),-1
10090,CL1A[Fibre(Target)],2011-03-29 11:00:00.111,0.0,0.0,0.0,0.0,0.0,0.0,
Fibre(Target),-1
10090,CL1B[Fibre(Target)],2011-03-29 11:00:00.111,0.0,0.0,0.0,0.0,0.0,0.0,
Fibre(Target),-1
10090,CL1B[Fibre(Target)],2011-03-29 11:00:00.111,0.0,0.0,0.0,0.0,0.0,0.0,
Fibre(Target),-1
10090,CL1B[Fibre(Target)],2011-03-29 11:00:00.111,0.0,0.0,0.0,0.0,0.0,0.0,
Fibre(Target),-1
10090,CL1C[Fibre(Target)],2011-03-29 11:00:00.111,0.0,0.0,0.0,0.0,0.0,0.0,
Fibre(Target),-1
10090,CL1C[Fibre(Target)],2011-03-29 11:00:00.111,0.0,0.0,0.0,0.0,0.0,0.0,
Fibre(Target),-1
10090,CL1C[Fibre(Target)],2011-03-29 11:00:00.111,0.0,0.0,0.0,0.0,0.0,0.0,
Fibre(Target),-1
10090,CL1D[Fibre(Ext-Lun Initiator)],2011-03-29 11:00:00.111,0.0,0.0,0.0,
0.0,0.0,0.0,Fibre(Ext-Lun Initiator),_
10090,CL1D[Fibre(Ext-Lun Initiator)],2011-03-29 11:00:00.111,0.0,0.0,0.0,
0.0,0.0,0.0,Fibre(Ext-Lun Initiator),_
10090,CL1D[Fibre(Ext-Lun Initiator)],2011-03-29 11:00:00.111,0.0,0.0,0.0,
0.0,0.0,0.0,Fibre(Ext-Lun Initiator),_
10090,CL1E[Fibre(Target)],2011-03-29 11:00:00.111,0.0,0.0,0.0,0.0,0.0,0.0,
Fibre(Target),-1
10090,CL1E[Fibre(Target)],2011-03-29 11:00:00.111,0.0,0.0,0.0,0.0,0.0,0.0,
Fibre(Target),-1
10090,CL1E[Fibre(Target)],2011-03-29 11:00:00.111,0.0,0.0,0.0,0.0,0.0,0.0,
Fibre(Target),-1
10090,CL1F[Fibre(Target)],2011-03-29 11:00:00.111,0.0,0.0,0.0,0.0,0.0,0.0,
Fibre(Target),-1
10090,CL1F[Fibre(Target)],2011-03-29 11:00:00.111,0.0,0.0,0.0,0.0,0.0,0.0,
Fibre(Target),-1
```

THP

For XP disk arrays

```
thp -dkc 10090 -hr -ms http://alpha138.rose.hp.com:80/ -auth administrator:administrator
Pool ID  Occupancy(%)
0        99
1        78
11       100
12       0
125      54
13       58
14       0
15       0
16       28
18       100
2        32
4        15
5        100
50       100
51       3
76       100
8        97
9        99
```

```
thp -dkc 10090 -pid 0 -hr -ms http://alpha138.rose.hp.com:80/ -auth administrator:administrator
-hr > thp2.txt
Time        Occupancy(%)
2010-09-07 17:39:01.203  99
2010-09-07 17:09:01.203  99
2010-09-07 16:39:01.203  99
2010-09-07 16:09:01.203  99
2010-09-07 15:39:01.203  99
2010-09-07 15:09:01.203  99
2010-09-07 14:39:01.203  99
2010-09-07 14:09:01.203  99
2010-09-07 13:39:01.203  99
2010-09-07 13:09:01.203  99

VVol ID THP Pool ID THP Pool Status Real LDEV Raid Group  ACP Pairs
VVOL Threshol(%) Pool Threshol 1((%) Pool Threshol 2 (%)

D:00      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:01      0   2  6:FB    1-2 2-2  AUMU BUNU     10  80     80
D:03      0   2  6:FB    1-2 2-2   AUMU BUNU     10  80     80
D:20      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:21      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:22      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:23      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:24      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:25      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:26      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:27      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:28      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:29      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:2A      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:2B      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:2C      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:2D      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:2E      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:2F      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:30      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:31      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:32      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:33      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:34      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:35      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:36      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:37      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:38      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:39      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
D:3A      0   2  6:FB    1-2 2-2  AUMU BUNU     5   80     80
```

For P9000 disk arrays

NOTE:

The following output is for Smart pools only.

```
thp -dkc 53025 -hr -pid 2

Time                    Occupancy(%)
2010-08-10 11:20:00.114  73
2010-08-10 11:05:00.111  73
2010-08-07 00:40:00.109  73
2010-08-07 00:35:00.112  73
2010-08-07 00:30:00.11  73
2010-08-07 00:25:00.109  73
2010-08-07 00:20:00.104  73
2010-08-07 00:15:00.122  73
2010-08-06 23:55:00.112  73
2010-08-06 23:50:00.111  73

VVol ID  THP Pool ID  THP Pool Status Real LDEV Raid Group ACP Pairs
VVOL Threshol(%)Pool Threshol 1((%)Pool Threshol 2(%)

0:11  2     2   A:05  4-1  LUXU   0  70    80
0:11  2     2   A:06  4-1  LUXU   0  70    80
0:11  2     2   B:00  5-1  AUMU   0  70    80
0:11  2     2   B:01  5-1  AUMU   0  70    80
0:12  2     2   A:05  4-1  LUXU   0  70    80
0:12  2     2   A:06  4-1  LUXU   0  70    80
0:12  2     2   B:00  5-1  AUMU   0  70    80
0:12  2     2   B:01  5-1  AUMU   0  70    80
0:13  2     2   A:05  4-1  LUXU   0  70    80
0:13  2     2   A:06  4-1  LUXU   0  70    80
0:13  2     2   B:00  5-1  AUMU   0  70    80
0:13  2     2   B:01  5-1  AUMU   0  70    80
0:14  2     2   A:05  4-1  LUXU   0  70    80
0:14  2     2   A:06  4-1  LUXU   0  70    80
0:14  2     2   B:00  5-1  AUMU   0  70    80
0:14  2     2   B:01  5-1  AUMU   0  70    80
0:15  2     2   A:05  4-1  LUXU   0  70    80
0:15  2     2   A:06  4-1  LUXU   0  70    80
0:15  2     2   B:00  5-1  AUMU   0  70    80
0:15  2     2   B:01  5-1  AUMU   0  70    80

Tier ID Lower Tier Delta Tier Total Tier  Tier Capacity Used Capacity
     Range      Range      Capacity    Threshold

0        19992      8163       12978       1815           8
1        139        0          109         0              110
```

```
thp -dkc 53025 -L -pid 2

Time            ,       Occupancy(%)
2010-08-10 11:25:00.111,73
2010-08-10 11:20:00.114,73
2010-08-10 11:05:00.111,73
2010-08-07 00:40:00.109,73
2010-08-07 00:35:00.112,73
2010-08-07 00:30:00.11,73
2010-08-07 00:25:00.109,73
2010-08-07 00:20:00.104,73
2010-08-07 00:15:00.122,73
2010-08-06 23:55:00.112,73

VVol ID,THP Pool ID,THP Pool Status,Real LDEV,Raid Group,
ACP Pairs,VVOL Threshol(%),Pool Threshol 1((%),Pool Threshol 2 (%)
0:11,2,2,A:05,4-1,LUXU,0,70,80
0:11,2,2,A:06,4-1,LUXU,0,70,80
0:11,2,2,B:00,5-1,AUMU,0,70,80
0:11,2,2,B:01,5-1,AUMU,0,70,80
0:12,2,2,A:05,4-1,LUXU,0,70,80
0:12,2,2,A:06,4-1,LUXU,0,70,80
0:12,2,2,B:00,5-1,AUMU,0,70,80
0:12,2,2,B:01,5-1,AUMU,0,70,80
0:13,2,2,A:05,4-1,LUXU,0,70,80
0:13,2,2,A:06,4-1,LUXU,0,70,80
0:13,2,2,B:00,5-1,AUMU,0,70,80
0:13,2,2,B:01,5-1,AUMU,0,70,80
0:14,2,2,A:05,4-1,LUXU,0,70,80
0:14,2,2,A:06,4-1,LUXU,0,70,80
0:14,2,2,B:00,5-1,AUMU,0,70,80
0:14,2,2,B:01,5-1,AUMU,0,70,80
0:15,2,2,A:05,4-1,LUXU,0,70,80
0:15,2,2,A:06,4-1,LUXU,0,70,80
0:15,2,2,B:00,5-1,AUMU,0,70,80
0:15,2,2,B:01,5-1,AUMU,0,70,80

Tier ID,Lower Tier Range,Delta Tier Range,Total Tier Capacity,
Tier Capacity Threshold,Used Capacity
0,19992,8163,12978,1815,8,1,139,0,109,0,110,
```

```
thp -dkc 53025 -pid 2

2010-08-10 11:25:00.111,73
2010-08-10 11:20:00.114,73
2010-08-10 11:05:00.111,73
2010-08-07 00:40:00.109,73
2010-08-07 00:35:00.112,73
2010-08-07 00:30:00.11,73
2010-08-07 00:25:00.109,73
2010-08-07 00:20:00.104,73
2010-08-07 00:15:00.122,73
2010-08-06 23:55:00.112,73

0:11,2,2,A:05,4-1,LUXU,0,70,80
0:11,2,2,A:06,4-1,LUXU,0,70,80
0:11,2,2,B:00,5-1,AUMU,0,70,80
0:11,2,2,B:01,5-1,AUMU,0,70,80
0:12,2,2,A:05,4-1,LUXU,0,70,80
0:12,2,2,A:06,4-1,LUXU,0,70,80
0:12,2,2,B:00,5-1,AUMU,0,70,80
0:12,2,2,B:01,5-1,AUMU,0,70,80
0:13,2,2,A:05,4-1,LUXU,0,70,80
0:13,2,2,A:06,4-1,LUXU,0,70,80
0:13,2,2,B:00,5-1,AUMU,0,70,80
0:13,2,2,B:01,5-1,AUMU,0,70,80
0:14,2,2,A:05,4-1,LUXU,0,70,80
0:14,2,2,A:06,4-1,LUXU,0,70,80
0:14,2,2,B:00,5-1,AUMU,0,70,80
0:14,2,2,B:01,5-1,AUMU,0,70,80
0:15,2,2,A:05,4-1,LUXU,0,70,80
0:15,2,2,A:06,4-1,LUXU,0,70,80
0:15,2,2,B:00,5-1,AUMU,0,70,80
0:15,2,2,B:01,5-1,AUMU,0,70,80

0,19992,8163,12978,1815,8,
1,139,0,109,0,110,


thp -dkc 53025 -ms http://alpha138.rose.hp.com:80/ -auth
administrator:administrator -hr
Pool ID  Occupancy(%)
0        0
2        73
```

```
thp -pid 2 -dkc 53025 -ms http://alpha138.rose.hp.com:80/ -auth
administrator:administrator -hr
Time                    Occupancy(%)
2010-09-09 10:58:11.156  73
2010-09-09 10:53:11.156  73
2010-09-09 10:48:11.156  73
2010-09-09 10:43:11.156  73
2010-09-09 10:38:11.156  73
2010-09-09 10:33:11.156  73
2010-09-09 10:28:11.156  73
2010-09-09 10:23:11.156  73
2010-09-09 10:18:11.156  73
2010-09-09 10:13:11.156  73

VVol ID  THP Pool ID THP Pool Status Real LDEV  Raid Group  ACP Pairs
VVOL Threshol(%)Pool Threshol 1((%)Pool Threshol 2 (%)

0:11      2    2   A:05        4-1       LUXU          0   70  80
0:11      2    2   A:06        4-1       LUXU          0   70  80
0:11      2    2   B:00        5-1       AUMU          0   70  80
0:11      2    2   B:01        5-1       AUMU          0   70  80
0:12      2    2   A:05        4-1       LUXU          0   70  80
0:12      2    2   A:06        4-1       LUXU          0   70  80
0:12      2    2   B:00        5-1       AUMU          0   70  80
0:12      2    2   B:01        5-1       AUMU          0   70  80
0:13      2    2   A:05        4-1       LUXU          0   70  80
0:13      2    2   A:06        4-1       LUXU          0   70  80
0:13      2    2   B:00        5-1       AUMU          0   70  80
0:13      2    2   B:01        5-1       AUMU          0   70  80
0:14      2    2   A:05        4-1       LUXU          0   70  80
0:14      2    2   A:06        4-1       LUXU          0   70  80
0:14      2    2   B:00        5-1       AUMU          0   70  80
0:14      2    2   B:01        5-1       AUMU          0   70  80
0:15      2    2   A:05        4-1       LUXU          0   70  80
0:15      2    2   A:06        4-1       LUXU          0   70  80
0:15      2    2   B:00        5-1       AUMU          0   70  80
0:15      2    2   B:01        5-1       AUMU          0   70  80

Tier ID  Lower Tier  Delta Tier  Total Tier  Tier Capacity Used Capacity
    Range       Range       Capacity    Threshold
1        6895        1533        19992       8             10962
2        0           0           35784       8             30030
1        6895        1533        19992       8             10962
2        0           0           35784       8             30030
```

TOP20UTIL

For P9000 disk arrays

```
top20util -hr -dkc 53012 -mp 1

++++++++++++++++++++++++++++++++++++++++++++++++++

Owner               Processing Type     BusyTime
LDEV:0:13           Open-target         0.020880299
++++++++++++++++++++++++++++++++++++++++++++++++++

LDEV:0:0C           Open-target         0.019729873
++++++++++++++++++++++++++++++++++++++++++++++++++

LDEV:0:07           Open-target         0.005565483
++++++++++++++++++++++++++++++++++++++++++++++++++

LDEV:0:02           Backend             8.6418947E-4
++++++++++++++++++++++++++++++++++++++++++++++++++


top20util -hr -dkc 53012 -mp 1 -st 07.19.2010 09:00:00 -et 08.02.2010 09:00:00


++++++++++++++++++++++++++++++++++++++++++++++++++

Owner               Processing Type     BusyTime
LDEV:0:13           Open-target         0.020880299
++++++++++++++++++++++++++++++++++++++++++++++++++

LDEV:0:0C           Open-target         0.019729873
++++++++++++++++++++++++++++++++++++++++++++++++++

LDEV:0:07           Open-target         0.005565483
++++++++++++++++++++++++++++++++++++++++++++++++++

LDEV:0:02           Backend             8.6418947E-4
++++++++++++++++++++++++++++++++++++++++++++++++++

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```

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